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ON

THE MEDICAL PROPERTIES

OF

THE NATURAL ORDER

RANUNCULACEÆ;

AND MORE PARTICULARLY ON THE

USES OF SABADILLA SEEDS, DELPHINIUM STAPHISAGRIA,

AND ACONITUM NAPELLUS,

AND THEIR ALCALOIDS,

VERATRIA, SABADILLINE, DELPHINIA, AND ACONITINE.

Mo. Bot. Garden.

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PREFACE.

The greater part of the contents of the following pages has been already laid before the profession, and the object the author has in view at present, is to give a connected account of the new medical properties, which he conceives to reside in many of the plants belonging to the natural order *Ranunculaceæ*, and more particularly as they are found in Sabadilla seeds, in the seeds of the *Delphinium Staphisagria*, and in the root of several species of the genus Aconitum. The properties alluded to, are those possessed by preparations of the plants above mentioned, when administered internally, of exciting sensations of heat and tingling on the surface of the body, and of producing similar effects locally when rubbed upon the skin, without, in most instances, giving rise to irritation of the vascular system; and when exhibited in either way in certain painful diseases, as Neuralgia, Rheumatism, and Gout, of alleviating or removing the pain, apparently by exerting a peculiar effect upon the nervous system, unattended by any narcotic influence.

These effects are more certain and exist in a higher degree of energy in the active principles obtained from the plants, and on this account the author has bestowed more attention on them, and, in most cases, would give them the preference as medicinal agents. He has also dwelt more fully upon the effects produced by them when applied to the surface, than when exhibited internally, because experience has shown, that by the former method, a quan-

tity sufficient to remove disease may be introduced into the system, whilst at the same time, in topical affections the remedy may in this manner be applied over the seat of the disease; but when the affection is more general in its character, the internal use, or both methods combined, will be found most advantageous.

The author would caution the profession against expecting too much from the employment of these remedies. In some cases they have given only a temporary relief, whilst in others they have had no effect: but generally speaking he has found them of much more advantage in the treatment of a very distressing class of affections, than any means hitherto discovered, and on this account he would recommend their use.

Russell Square, June 1*st*, 1835.

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ON THE MEDICAL PROPERTIES

OF THE NATURAL ORDER

RANUNCULACEÆ;

AND OF THE ALCALOIDS,

VERATRIA, SABADILLINE, DELPHINIA, AND ACONITINE.

Of the three plants, whose medicinal properties it is intended to give an account of in the following pages, two, the *Delphinium Staphisagria* and the *Aconitum Napellus*, belong to the extensive family *ranunculaceæ;* and with regard to the third, the plant which yields the Sabadilla seeds, little appears to be known, by which its precise character and situation in botanical arrangements can be determined. It has been supposed to belong to the class *Colchicaceæ*, but as in some of its medicinal properties it is much more allied to the *ranunculaceæ*, it is intended, for the sake of convenience, to speak of it as belonging to this latter class, until our knowledge of it becomes more definite.

The natural family *ranunculaceæ*, as a whole, exhibits considerable uniformity; but nevertheless, some discrepancy occurs when its parts are more minutely examined. Many of the individuals are acrid and caustic in the highest degree, whilst others are aromatic, as the *Nigella Sativa*, which in consequence of its taste is sometimes used as a pepper. In some again, the properties they possess are owing to an active principle which can be separated by chemical processes; whilst in others, as for instance, in almost the whole tribe of ranunculuses, these are destroyed by drying and boiling, or even by simple infusion in water, whilst they are augmented by acids, honey, sugar, wine, alcohol, &c.* The acrid *Clematis Vitalba* is used as an article of food after being boile , by the country people in the north of Italy, and the *Ranunculus aquaticus* is sometimes given to cattle after being deprived of its acrimony by drying. The general properties of the family may be

* Decandolle Essai sur les Propriétés Médicales des Plantes.

thus stated ; Acrid and vesicatory, *e. g.* many of the ranunculuses, *Clematis recta*, *Knowltonia Vesicatoria*, &c., which are used as blisters. Acrid, stimulant, cathartic, emetic, *e. g.* the roots of different species of Hellebore, *Delphinium Staphisagria*, &c. Bitter, tonic, antispasmodic, *e. g.* *Zanthoriza apiifolia*, *Hydrastis Canadensis*, *Pæonia officinalis*. Along with the acrid principle there exists a powerful narcotic property in the Aconites ; some of the acrid plants, as the *Ranunculus Glacialis*, are sudorofic, and others are diuretic and vermifuge.

In addition to these, there is another class of properties, which exists in the *Delphinium Staphisagria*, some species of the Aconites, and in the Sabadilla seeds, and in a more marked degree in the alcaloids prepared from these plants ; namely, the Delphinia, Aconitine, and Veratria ; and there can be little doubt, that further investigation into the medicinal action of the *ranunculaceæ*, will increase the number of the individual plants which possess such properties.

When preparations of the species above mentioned, or their alcaloids, are exhibited internally in small and repeated doses, they give rise to peculiar effects on the nervous system, but more particularly upon the nerves of sensation. These consist of heat, and tingling on the surface of the skin, beginning generally in the extremities, and extending themselves towards the trunk and head, and sometimes ending in perspiration ; and in rheumatic and other painful affections, these sensations are attended by marked relief to the patient. The same effects are produced, but more locally, when the active principles and other preparations of the plants are applied by friction over the seat of the disease ; heat and tingling are likewise induced ; at first only in the part where the friction has been made, but afterwards extending itself over the skin. In affections which are topical in their nature, these peculiar feelings are also attended by great diminution in the severity of the symptoms, and often by a removal of them after every other means have failed.

It would be an interesting question, to determine in what manner such effects are produced : but as yet nothing has been made out, that is calculated to throw light upon the subject. All that can be said, is, that they are matters of observation, and it is quite sufficient for the purpose of the practitioner that they are so, for it is upon such evidence that a great part of our practice is founded. It is to this latter class of properties, then, that it is the author's wish to direct the attention of the profession ; and in doing so he may be allowed to express his conviction, that if the directions and illustrations to be given, be sufficiently explicit to enable the profession to employ the remedies he recommends, the results will be satisfactory.

CHAPTER I.

Medicinal Properties of Sabadilla Seeds.

Considerable difference of opinion exists, as to the precise plant which yields the Sabadilla seeds. Some authors are of opinion that they are the produce of different species of *Veratrum*; the *V. Sabadilla*, *V. Ovbilia*, and *V. Officinale*—others, of the *Vellozia Squamata*; and lately the plant has been considered as a species of *Xerophyllum*, the *X. Sabadilla*. It is a native of Mexico; it has been placed amongst the *Colchicaceæ*, but in some of its properties it appears more nearly allied to the *Ranunculaceæ*; very little that is certain, however, is known regarding its history. The seeds are dark-coloured, rugous and slightly curved, and are contained in a light brown capsule about half an inch in length. They are without smell, but have an acrid burning taste. When given to animals in sufficient quantities to produce poisoning, their effects are marked by great irritation in all the mucous membranes, particularly in the intestinal canal, in the mucous membrane of which they excite inflammation by whatever manner the poisonous matter may have been introduced; and along with this effect, great disturbance of the nervous system comes on before death.

They have been used medicinally in the form of powder, ointment, and infusion for destroying pediculi, and internally for removing tænia, and for the cure of hydrophobia.*

I have employed two preparations; the tincture and extract, made from Sabadilla seeds, with considerable advantage in some cases. The tincture made use of is a saturated one, prepared by digesting for ten days a quantity of the seeds, freed from their capsules and bruised, in as much strong alcohol as will cover them. It forms a useful rubefacient in chronic rheumatism and paralytic cases, and has a tendency to bring out a slight eruption on the skin after it has been rubbed for some days. It produces, in a very marked degree, a tingling sensation, similar to that caused by Veratria; and friction with it ought always to be continued until this effect is brought about at each application.

When rubbed over the heart, this tincture has in some instances the effect of reducing the frequency and force of the pulse, in a marked degree, and has often appeared useful in cases of nervous palpitation.

The extract is prepared by evaporating the saturated tincture made as above directed, with a very gentle heat, to a proper consistence. When given internally in small doses, it has nearly the same effects

* Hardy's Travels in Mexico.

as Veratria, and may be employed with advantage in painful rheumatic and neuralgic affections. One sixth part of a grain, made into a pill, and given three or four times a day, appears to be the proper dose, and it should be continued, and gradually increased in quantity according to circumstances. This preparation also induces sensations of heat and tingling on the surface of the skin, and sometimes acts as a diuretic.

Preparation of Veratria.

Veratria, the active principle of the Sabadilla seeds, was discovered by MM. Pelletier and Caventou, in the year 1819,* and about the same time in Germany by Meissner and Van Mons. In their subsequent investigations, the two first-named chemists detected the presence of a similar principle in the bulb of the *Colchicum Autumnale*, and in the root of the *Veratrum Album:* the substance obtained from the colchicum, however, has since been discovered by MM. Geiger and Hesse, to differ from Veratria in several important particulars, to be afterwards noticed, and they have in consequence considered it as a new principle under the name of *Colchicine*.† The true nature of the alcaloid extracted from the white hellebore, is still unknown; so that the Veratria of commerce may be considered as being obtained entirely from the Sabadilla seeds.

Until very lately, Veratria, as obtained according to the processes employed by its discoverers, was considered to be a simple body; but from the recent investigations of M. Couerbe, it appears to consist of four distinct substances, to which he has given the names Veratrine, Veratrin, Sabadilline, and Mono-hydrate of Sabadilline; and these are obtained separately in the following manner:—A concentrated tincture, made by digesting Sabadilla seeds with boiling alcohol, is slowly evaporated to the consistence of an extract, which is next dissolved in water acidulated with sulphuric acid, and the solution filtered, after being heated to the boiling temperature. The liquor obtained, holds dissolved in it the four substances above-mentioned, along with a quantity of colouring matter. By the addition of potass, they are all precipitated, and the precipate is to be re-dissolved in alcohol, and the tincture thus obtained is evaporated to the consistence of an extract, and this again dissolved in acidulated water, as before. The addition of potass to this solution, throws down a light-coloured precipitate, which, when dried, is nearly white, and constitutes the Veratria of commerce. As thus obtained, it is acrid, alcaline, and forms incrystallizable salts with acids.

This substance, however, is still in an impure state, and is again to be dissolved in water acidulated with sulphuric acid. To this solution nitric acid is to be added, so as to throw down an abundant dark-coloured precipitate. The liquid is next poured cautiously off, and a solution of potass or ammonia is added, drop by drop, as long

* Journal de Physique, 1819. † Journal de Pharmacie, 1834.

as any precipitate is formed. The precipitate is next to be washed with cold water, and dissolved in alcohol, and the tincture evaporated to the consistence of an extract.

By treating this extract with boiling water, the Sabadilline and Mono-hydrate of Sabadilline are taken up, and the other two principles left undissolved. The solution, on cooling, deposits the Sabadilline in crystals, and the Mono-hydrate is obtained by slowly evaporating the remaining liquid in vacuo. The portion of the extract left undissolved by the water, is next treated with ether, which takes up the pure *Veratrine*, and leaves the *Veratrin*.

The Veratria of commerce is then a very complicated substance; but as it is the only form which has yet been introduced into medicine, the remarks which are to follow are applicable, at least so far as we yet know, to it alone. It is prepared in the form of a fine subtile powder, varying in colour from light brown to nearly white; it is very sparingly soluble in water, but sufficiently so to communicate a sensibly acrid taste to the fluid. It is very soluble in alcohol and ether. It is insoluble in alcalis, but combines readily with acids, and forms incrystallizable salts. It restores the blue colour of litmus paper, reddened by acid. When heated, it melts, and has the appearance of wax; and on cooling, presents a mass of a brownish transparent appearance.

It is destitute of smell, but when brought in contact with the mucous membrane of the nose, it occasions violent sneezing; when applied to the conjunctiva, it excites considerable irritation, and causes an abundant flow of tears. Its taste is extremely acrid, but destitute of bitterness.

According to the experiments of MM. Magendie and Andral, Veratria acts on animals as a powerful irritant, occasioning rapid inflammation in the lining membranes of the cavities into which it is introduced; ending in tetanus and death.* There is some discrepancy, however, betwixt its effects upon the intestinal canal, as observed by M. Magendie, and those that have come under the author's observation, and which shall now be noticed.

Internal Administration of Veratria and its Salts.

The acknowledged value of colchicum autumnale in the treatment of a variety of diseases, appears to have given rise to considerable expectations that the discovery of the active principle of the plant would be of great advantage to medicine; and accordingly we find, that no sooner had MM. Pelletier and Caventou succeeded in obtaining Veratria, than a number of experiments were instituted, with a view to determine its action upon the animal economy. These were principally conducted by MM. Andral and Magendie, and agreed in proving it to be possessed of most energetic properties, and similar, though in a more exalted degree, to those

* Magendie, Journal de Physiologie, tom. 1.—Formulaire.

ascribed to white hellebore, sabadilla seeds, and colchicum, by Schabel, Orfila, Sir Everard Home, and other observers. Unfortunately, however, these properties appeared to be of such a nature as almost to preclude the possibility of Veratria ever being employed in medicine. From M. Andral's experiments on animals, it was proved that when applied directly to any of the tissues, it produced rapid inflammation of the part ; and that when introduced in small doses into the system, either through the medium of the veins or intestines, it occasioned violent vomiting and purging ; and in larger doses, tetanus and death.

M. Magendie administered it internally in the human subject, and found that, in the dose of a quarter of a grain, it acted powerfully upon the intestines, and produced very copious dejections ; and he recommends its employment on this account, as a convenient remedy in cases requiring a speedy action upon the bowels, particularly in old men, in whom he states his having used it with much advantage ; he also advises its substitution for the preparations of colchicum, in the treatment of those diseases in which they had been employed. Such, however, was the dread inspired by the observed properties of the new alcaloid, that few practitioners ventured upon a trial of it ; and much surprise was expressed that, with these before his eyes, M. Magendie should have ventured upon such a dangerous recommendation.

Veratria has hitherto been little employed internally in this country ; but where it has been used, the effects produced have been nearly similar to those already recorded by practitioners on the Continent ; and agree with them in proving it to be possessed of great activity as a purgative and emetic : so much so, indeed, that its administration appears to have been very generally abandoned, as being fraught with greater danger, from this circumstance, than could have been counterbalanced by any good effect that might have arisen from it. This was also the author's opinion at the time his work on Veratria was published ; and as the impressions he had received from the writings of others had to a certain extent been confirmed by his own experience, he considered it his duty to lay them before the public. Since then, however, he has employed pure Veratria internally to a considerable extent, in consequence of having observed that its salts produced none of those effects which had been ascribed to it, and in very few cases out of a great many in which it has been employed, even when given to the extent of four or six grains in twenty-four hours, has it produced the slightest purgative effect : it has often occasioned a degree of nausea, but this may easily be obviated by taking care that too large a dose be not given at one time,

To what are we to ascribe this great discrepancy in the operation of so powerful a substance ? It may arise from one of two causes, or perhaps from both. Veratria, when first used, appears to have been obtained in part from the colchicum autumnale, and on this account differed in some material points from the alcaloid, as it is

now prepared from the seeds of the Veratrum Sabadilla: so much so, that it has been described as a new principle by MM. Geiger and Hesse, under the name of Colchicine — one of the most prominent properties of which, according to those gentlemen, is to produce violent purging and then vomiting.

Two counter-experiments are related by them: in one of which a small dose of *Colchicine* was given to a cat: at the end of an hour it was violently purged; vomiting next came on, and then death; and upon examination, it was found that violent inflammation had taken place in the stomach and intestinal canal, with sanguineous infiltration throughout their whole extent. The second experiment was made upon a younger cat, and a smaller dose of *Veratria* was administered: the animal died very speedily, but neither vomiting nor purging are mentioned as having been produced: and upon examination, it was observed that the superior part of the œsophagus was the only portion of the alimentary tract where inflammation had taken place; and it was remarked that this part had escaped injury in the animal which had been poisoned by the *Colchicine.** These facts might of themselves be sufficient to account for the great difference in the observed action of Veratria above alluded to; but it ought also to be kept in mind, that it is very probable the alcaloid, from the large quantity which has been lately brought into the market, may now be made in a state of greater purity, from that dexterity in its manufacture which practice alone can give. Whichever explanation of the circumstance may be adopted, it certainly appears that pure Veratria, or any of its salts, may be substituted for preparations of colchicum, not only with perfect safety, but with considerable advantage, provided an ordinary degree of caution be observed in its exhibition.

The best form of administering it is that of pill; and the following prescription is the one I generally make use of:—

℞—Veratriæ	gr. ii.
Pulv. Rad. Glycyrrh.	gr. xii.
Ext. Hyoscyam	gr. vi.

M. fiat mass. in pilul. aequal. duodecim. divid. quarum sumat unam ter in die.

For the two last ingredients it will sometimes be found advantageous to substitute a few grains of compound rhubarb pill, especially when there is a tendency to costiveness. This prescription I have found very useful in the treatment of painful spasmodic affections, rheumatism, gout, &c. It has also been used in diarrhœa with considerable effect; and in this disease one pill ought to be given after each stool, until the relaxed state be removed. After a few doses have been taken, the patient generally experiences a sensation of warmth in the stomach, which extends over the abdomen, chest, and upper and lower extremities: this is succeeded by a feeling of tingling in various parts of the body, and frequently a degree of perspiration is induced.

Veratria has been combined with several acids; but the only

* Jour. de Pharmacie, Mars 1834.

products as yet obtained that are fit for administration, are the sulphate, tartrate, and acetate.

According to Professor Turner, and M. Courbe, they are crystallizable, when prepared from *pure* Veratria ; but the difficulty in obtaining them in this state must, for some time at least, render it necessary to make use of the more common and more easily prepared form. In this condition they have, when solid, very much the appearance of resins ; they are friable, and can be reduced to a fine powder, which is of a brownish aspect. They are all very acrid when applied to the tongue, and leave a sensation of heat and tingling in the part of the mucous membrane with which they may have been brought in contact.

When given in the doses to be presently mentioned, like Veratria itself, they in general give rise to the following effects : a sensation of warmth in the stomach, which gradually extends itself over the abdomen and lower part of the chest : after the dose has been repeated once or twice, the same feeling is experienced in the lower extremities, and particularly in the feet ; the upper extremities and head become also affected in the same manner : and if the medicines be pushed further, a sensation of tingling, exactly similar to that caused by frictions with Veratria ointment manifests itself in various parts of the body, and sometimes over the whole surface of the skin ; this is generally accompanied by considerable perspiration, and some feeling of oppression, and all these effects are augmented by heat, or by the use of warm diluents. To this succeeds a sensation of coldness ; and should their administration be still continued, the stomach becomes affected, and a degree of nausea takes place, followed by vomiting. In a few instances only have they acted as diuretics, and in still fewer as purgatives. No narcotic effect has been observed to arise from their use.

In their action upon disease, the salts of Veratria, when given internally, are possessed of powers very similar to those exercised by the base when rubbed upon the skin. The particular diseases in which they appear to be of most service, are tic douloureux, gout, and rheumatism, especially in the two first named. In the treatment of these, any of the salts may be employed ; but the tartrate is upon the whole to be preferred, as it is less liable than the others to give rise to irritation of the stomach ; either of them, however, may be had recourse to with safety. The best method for exhibiting them is the form of pill, made according to the following prescription ;

℞—Tart. Veratriæ . . . . . gr. ii.
Pulv. Rad. Glycyrrhiz. . . . . gr. xii.
Mucilag. Acaciae . . . . . q. s. Misce optime et divide in pilulas æquales duodecim, quarum sumat unam tertia quaque hora.

The dose of the tartrate ordered above is sufficient to begin with, and it may be augmented, until the quantity given amounts to a grain and a half, or two grains in the course of the day : beyond

which it will not be necessary to push the medicine, as its peculiar effects in general show themselves before that quantity is used. Should the sulphate or acetate be preferred, the doses administered ought to be rather less, as these act more readily upon the stomach than the tartrate. M. Magendie has suggested the form of *solution* for the employment of the sulphate, but it is a very objectionable one, both on account of its taste, and from the disagreeable sensations left by it in the mouth and pharynx, which often are of such a nature as to occasion nausea and vomiting.

In any case in which it may be desired to make use of the salts of Veratria, the plan that appears the best to be followed, is to administer a pill every three hours, until the sensation of heat and tingling manifests itself, and when this takes place, some alleviation of the pain will in general be observed; but should this not be the case, the treatment ought to be persevered in, until it has had a fair trial, the dose being at the same time augmented accordingly as the patient can bear it. In some instances, it has not been found necessary to continue the pills above a few days, whilst in others, a week or two has been required to produce their full effects; and in almost every case, it has been requisite to regulate the bowels, by means of gentle aperients, to obviate the constipation which often comes on during their use. When the disease occurs in regular paroxysms, the pills ought to be resumed an hour or two before the expected time of attack.

External Application of Veratria.

Veratria may be applied externally, either in solution, in alcohol, or made into an ointment with hog's lard: the latter form is the one which has been most generally employed; but where unctuous applications are objected to, an embrocation made by dissolving from ten to twenty or more grains of Veratria, in an ounce of boiling alcohol, if applied in the same manner as the ointment, will prove equally efficacious.* The ointment may be made with similar proportions of the alcaloid to an ounce of lard, and of this, a piece, the size of a large nut, may be rubbed with the hand from five to fifteen minutes, night and morning, as nearly as possible, over the seat of the disease, until relief from the urgent symptoms be experienced; care being taken to observe that the skin over which the friction is to be made, be free from injury, otherwise considerable irritation of the part will ensue; and for reasons already given, the person who applies either form, must be careful not to insert even the smallest quantity under the eyelids.

M. Magendie appears to have been the first person who suggested the external application of Veratria in rheumatism, gout, and anasarca; but his proposition does not seem to have been complied

* In cases where the skin is irritable, the proportions of Veratria employed, must be smaller than those now given.

with, neither does he himself appear to have been fully aware of its importance in a medicinal point of view ; and indeed, the weakness of the preparations recommended by him, even had they been made use of, must have prevented the striking effects produced upon certain diseases by the Veratria, when more freely employed, from coming under his observation.

The skin over which the ointment has been rubbed, in general shows no mark of irritation, even after the friction has been continued for some length of time: sometimes an evanescent blush pervades the surface, and in rare instances a quantity of eruption has appeared upon the part, but these bear only a small proportion to the cases in which no such effects are produced. When a small quantity of the ointment is rubbed in, the patient generally experiences a considerable degree of warmth and tingling in the part, and until this takes place, the peculiar effects of the medicine never manifest themselves; the circumstance, therefore, is one worthy of attention, and may serve as a criterion whereby to estimate the extent to which the friction may be carried without producing inconvenience, and also to judge of the degree of purity of the Veratria employed; for when, as is sometimes found to be the case, the medicine is mixed with impurities, these sensations are not produced, and its action is by no means either so certain or powerful as when it is free from adulteration. This last observation appears necessary to prevent the practitioner from laying a charge of failure against it in cases where the impure Veratria may have been made use of in compounding the prescription.*

After the ointment has been applied a sufficient length of time to put the constitution completely under its influence, the feeling of heat and tingling extends itself from the place where the friction may have been made, over the whole surface of the body, and produces sensations similar to those which have been already described as arising from the internal use of Veratria and its salts.

The sensibility of the parts over which the application has been made, is increased so as to render them peculiarly susceptible of the presence of certain stimuli, particularly electricity or galvanism ; these agents have in some instances been applied along with the Veratria ointment, but have given rise to sensations so acute as to render their further employment almost insupportable, and that without the slightest perceptible alteration of the surface.

Such are a few of the more remarkable effects resulting from the application of the Veratria to an entire surface, and in the great majority of cases these will be found sufficient for every purpose which

* Pure Veratria is entirely soluble in alcohol, and burns without leaving any residuum ; but, perhaps the simplest and best test is to dissolve four grains in a drachm of alcohol, and to rub a small quantity of this solution on the wrist or forehead ; when the Veratria is good, the heat and tingling manifest themselves after the friction has been continued for two or three minutes, and the length of time required to produce this effect affords a tolerably correct estimate of the efficacy of the medicine.

they are intended to serve : in some affections, however, in which the symptoms are more severe, or which are seated in parts only thinly covered by integuments, the attempt has been made to apply it directly to a part denuded of the cuticle, but although the effects upon the disease were much greater than when the surface remained unbroken, yet the extreme irritation which followed the practice rendered its repetition impossible.

External Application of Veratria in Affections of the Heart.

When any of the preparations of Sabadilla or Veratria are administered in repeated small doses by the mouth ; besides exerting their peculiar effects upon the nerves of sensation already mentioned, they act also upon the circulating system. In many instances the force and frequency of the pulse are remarkably diminished by them, and the circulation is rendered more regular ; whilst in others, a contrary effect is produced. This appears to be the result of the influence exerted by the medicine on the nervous system, for it takes place chiefly in those whose nerves are easily excitable ; in some cases, also, in which organic disease of the heart has been present, the internal exhibition of one or other of the preparations has afforded the patient considerable relief, but apparently, not so much by acting upon the nervous system, as upon the kidneys, and thus removing some effusion existing in the chest, and which was the immediate cause of the aggravated symptoms.

Precisely the same effects are produced, when Veratria ointment, or the tincture of Sabadilla, are rubbed over the region of the heart, though perhaps not in so great a degree. This latter method, however, of employing Veratria, is upon the whole the preferable one, as in many cases the stomach might be incommoded by the internal use of it, and in addition to its action on the heart, there is also another exerted, when it is applied to the skin, namely, the tingling, which of itself appears to have a beneficial effect, especially in nervous cases, probably by acting as a counterstimulant, whilst the quantity absorbed during the friction is sufficient to produce its other effects on the system.

From the observations which I have made on the action of Veratria in affections of the heart, I have been led to conclude, that there are some cases in which the symptoms may be removed by its use, though of a class that might have been considered as indicating confirmed organic disease; amongst the following, will be found instances of this kind, and others could have been given; these have occurred in patients in whom a gouty or rheumatic diathesis has been present, and this fact may perhaps afford some explanation of the effects of the remedy.

There are, then, three states of disease, in which the ointment may be tried: namely, simple nervous palpitation; in the same affection occurring in gouty subjects; and as a diuretic in cases of organic disease, though of course in instances of this kind any

relief which it may give, can at best be only temporary; it has, nevertheless, given relief, and if it should do no good it will at least do no mischief.

The application best adapted for this class of affections, consists of fifteen or twenty grains of Veratria, made into an ointment with an ounce of lard, and of this a piece the size of a nut, should be rubbed over the region of the heart for five minutes every night, and it may be continued according to the effect produced.

CASE I.

A LADY, fifty-five years of age, was attacked seven years ago with what her medical attendants considered to be an inflammatory affection of the lungs, and for which she was profusely bled, and otherwise actively treated. The violent symptoms were by these means removed; but there still remained a degree of weakness and affection of the chest, sufficient to confine her almost constantly to her room for nine months afterwards. Since that time, she has recovered considerably, but has been under the necessity of remaining in an apartment, kept at an equable temperature, during the winter; and with the prospect of being obliged to continue the same regimen for the remainder of her life.

Throughout the whole seven years she has had constant cough, attended with scanty mucous expectoration: a difficulty of breathing so great, as to prevent her sleeping at night, or even remaining in the recumbent posture for any length of time without bringing on distressing fits of coughing: respiration very much hurried, and the lips of a purplish hue: pulse so small, rapid, and irregular, as to render it difficult to ascertain the number of its beats. Over the region of the heart, and over a great part of the anterior surface of the thorax, there was a very perceptible undulatory motion, altogether different from ordinary pulsation; and the ear, applied to the chest over the same region, distinguished the heart's action to be extended, indistinct, and undefined in character. Along the whole length of the left arm, from the shoulder to the points of the fingers, she complained of pain and a feeling of numbness, which rendered the extremity almost useless: this symptom had lasted about four years. There was no very marked derangement in the digestive organs. The bowels were regular, the appetite pretty good; but there existed a slight degree of flatulence, not however so great as to occasion much inconvenience, and there was nothing very particular in the appearance of the tongue.

The patient had previously been under almost every variety of treatment, but without receiving any benefit. Upon the supposition that there might be some accumulation in the bowels sufficient to aggravate the symptoms, she was directed to use aperient medicine for a few days, but without producing any alleviation. She was then put under the influence of small and repeated doses of the

tartrate of antimony, and along with this treatment, frictions with croton oil were applied over the chest and down the left arm, until a pretty free eruption was brought out. Under this plan the patient, for the first time from the commencement of her illness, experienced decided relief; and it should certainly have been persevered in until a fair trial had been given to it, had not such a degree of debility supervened, as to give rise to considerable doubt whether or not it could be continued with safety; the cough and difficulty of breathing had very much diminished in severity, but the pain in the arm remained unabated, and at the end of ten days she would not consent to the further employment of the remedies, and they were in consequence given up.

Before the time at which this patient came under treatment, the very striking effects which the Veratria, when applied externally, exercises upon the pulse, in removing irregularities and intermissions, and in diminishing its frequency, had presented themselves to observation; and although it was not anticipated that very great benefit could arise from its use in a case so apparently hopeless, it nevertheless appeared probable that, at least, a temporary relief from the violence of the symptoms might be procured, if the medicine only acted upon the circulation, without inducing such a degree of general debility as had resulted from the means previously had recourse to. A piece, as large as a nut, of an ointment composed of fifteen grains of Veratria and an ounce of hog's lard, was accordingly directed to be rubbed twice a-day over the chest and along the affected arm five minutes each time, and the result very far exceeded the expectations formed. The first application relieved the chest symptoms considerably. The cough and breathlessness, to a certain extent, subsided, and the pulse and action of the heart were greatly improved: the most decidedly beneficial effects however were produced upon the extremity; the pain and numbness had not altogether disappeared, but these symptoms were so much alleviated, as to induce the patient to state that, comparatively speaking, she had recovered the entire use of her arm. From this time the ointment was directed to be used every evening for about ten days, and then only occasionally, as it might be found necessary.

In about a fortnight from the first application of the Veratria, the patient was able to leave her room and walk up and down stairs with facility; and the general improvement of her health was such, that she ventured into the open air, but in consequence of incautious exposure, the symptoms returned two or three times, though by no means with the same severity as before; and when such an occurrence took place, one or two rubbings with the ointment afforded complete relief. She is now in comparative health; her general appearance is good, the pain and numbness of the arm have entirely disappeared, the circulation is much more regular than it has been for a great length of time, the cough and difficulty of respiration are almost gone, and she can now remain in the recumbent position,

and enjoy a good night's rest; and the last time I saw her, she had walked about four miles without any inconvenience.

CASE II.

Mr. B., aged thirty-six, of sedentary habits, and by profession a banker's clerk, was seized about ten years ago, without any apparent cause, with palpitation on the left side of the thorax, which was followed by pain and a sensation of tightness and anxiety over the region of the heart; his pulse became irregular and intermittent; his breathing, however, has not been to any great degree disturbed, and he has been able to take free exercise, and with some benefit. During the course of his illness he has had no cough, but has had occasional sighing.

The digestive functions have been considerably impaired, the appetite bad, the bowels disordered, and an almost constant tendency to flatulence has been present. The nervous system has also been for some time under much derangement, marked by tremors in the hands, irritability of temper, disturbance of the mental powers, particularly of the memory, which has suffered a good deal in its integrity; for some time past he has experienced a disinclination for exertion, and has gone through his business more as a matter of duty than of pleasure. His sleep has been disturbed and unrefreshing; and he has laboured under great depression of spirits, from the belief that his complaint, from the number of remedies he had tried without advantage, was incurable.

Under these circumstances, and considering from the account he had given, that to attempt a cure by the means usually employed in such cases, would only be a waste of time, and also in consequence of the success which had attended the previous trials made with the Veratria, it was determined at once to employ it in his case; and with this view he was directed to take a little opening medicine, a practice always necessary to be pursued during the time the Veratria is in use; and an ointment of the same strength as that applied in the preceding case, was ordered to be rubbed on, night and morning, over the region of the heart. As the patient lived at some distance he did not present himself again until the end of a week, when he returned to announce that he was quite well. The palpitation and nervous symptoms had entirely vanished, and he was then in the enjoyment of the best health and spirits. I have seen him once since that time, and he has not had the slightest return of his complaint.

CASE III.

Mrs. L., a lady thirty-six years of age, and of a spare habit of body, residing in Bristol, has been suffering for five years from palpitation of the heart, attended by considerable difficulty of breath-

ing. She dates the commencement of her disease from a severe inflammatory affection of the chest, occasioned by cold caught during her confinement. To relieve the chest symptoms, bleeding and other antiphlogistic measures were had recourse to; but the palpitation continued to such a degree, as to render her incapable of taking any exercise without materially aggravating her symptoms. She has had many exacerbations arising from slight causes, and yet so severe as to render venesection necessary to alleviate the violent throbbing in the left side of the thorax. Her eyes are suffused, her memory impaired, and she has a considerable degree of nervous irritability. Her breathing is difficult, accompanied by slight cough and a sense of partial suffocation, along with pain across the region of the heart and down the left arm, and these feelings are materially increased by walking or any other exertion. Her pulse is irregular and quick; bowels costive; feet generally cold; and her sleep interrupted by the palpitation.

While labouring under these symptoms she was put under the influence of small doses of tartrate of antimony and blue pill; and at the same time an embrocation of croton oil was ordered to be rubbed over the chest and down the affected arm, until a free eruption was produced. So long as the patient continued this plan of treatment, and remained quiet, she experienced great relief; but the palpitation returned nearly as violent as ever, upon slight exertion, and she now began to complain of a degree of debility which she had not before been subject to. Under these circumstances, she was ordered to have an ointment prepared with twenty grains of Veratria to an ounce of lard, rubbed in the usual quantity over the region of the heart for five minutes night and morning; and owing to the severity of the pain in the arm, frictions with the croton oil were ordered to be made along it, until a raw surface was obtained, and over this the Veratria ointment was applied.

On the night after the first application the symptoms were very much diminished in intensity, but the Veratria had occasioned a degree of heat and tingling in the arm, so great as to prevent her sleeping; the pain, however, never afterwards returned. In three or four days she began to take exercise without inconvenience; from this time she gradually improved, and at the end of three weeks left town, and returned home quite well.

CASE IV.

Mr. J., a clergyman, fifty years of age, has been affected with severe palpitation for the last seven years, accompanied by quickness and irregularity of the pulse, difficulty of breathing, loss of voice, cough, expectoration, and a distressing sense of anxiety; has sometimes been seized in the pulpit with giddiness, succeeded by throbbing in the neck and confusion of intellect, and these symptoms have occasionally gone on to such an extent as to oblige him to de-

sist from his duties for two or three months at a time: his bowels are regular, and his digestion generally good.

He was ordered to take small doses of tartar emetic, and to have a blister applied over the chest; and this treatment was pursued with considerable advantage for the time, but when it was remitted he soon returned to the same state as before. As this seemed a fair case upon which to make trial of the Veratria, it was ordered to be rubbed on in the manner already described. By making use of the frictions once every night he became gradually better, and at the end of a week considered himself quite well; he was advised, however, to continue the ointment for a little longer, and then to leave it off by degrees: this was accordingly done about a year and a half ago, and he has remained ever since in excellent health, free from his old complaints, and able for the discharge of the functions of his office.

CASE V.

Mr. W., aged fifty-eight, has been affected for seventeen years with palpitation, which, during the last seven of that period has been attended by great difficulty of breathing, occurring in paroxysms, and coming on especially whilst taking exercise on foot. The dyspnœa at these times has been so severe, and has been accompanied by such extreme pain across the chest, as to compel him to lay hold on the nearest object for support. The pain, during the fit, extends down the left arm; and is of such intensity, that in the words of the patient, "no language can describe it."

For these and other symptoms he has, during the last ten years, applied to all sources for relief, and almost every possible remedy has been tried without procuring for him any ease. At the time he came under treatment, he had, besides the symptoms mentioned, a purple blush upon his face, and more particularly over his nose and lips; his voice was weak and quivering. Upon applying the ear over the region of the heart, a tremulous, confused, irregular pulsation was heard: the pulse was irregular and very intermittent: the left side of the chest appeared much larger than the right, and the ribs over the cardiac region seemed pushed out as if to afford a larger space for the heart's action. There was considerable distension of the abdomen, along with a very evident degree of enlargement on the right side, immediately under the margins of the ribs; his bowels had been for some time in a very torpid state, and required active medicines to operate upon them; the lower extremities were a little swollen, and the urine deficient in quantity. His sleep was unrefreshing, and often disturbed by fits of coughing, which generally ended in great exhaustion.

As it was evident, that in a case of such severity and duration, little more could be done than merely to relieve the sufferings of the patient, by endeavouring to mitigate the symptoms as much as possible, the treatment followed was addressed to that end. A course

of medicine was prescribed, consisting of purgatives combined with antacids, for the purpose of clearing out the bowels and removing the distension of the abdomen. These means were employed alone, for about a week, and then, with the addition of a little squill to the pills previously ordered, it was persevered in for a fortnight longer; at the end of which time he felt considerably better. The swelling in the legs had diminished, the digestion was improved, and, altogegether, he was in a more favourable state of health than before.

During the previous treatment of this case, counter-irritation, by means of blisters, issues, tartar emetic ointment, &c., had been freely employed, and with so little effect, further than bringing about a temporary alleviation, that the patient would, on no account, consent to their repetition now, and he was therefore recommended to make use of the Veratria ointment, but certainly without any great expectations of its producing a beneficial effect.

An ointment of the usual proportions was ordered to be rubbed, for five minutes, night and morning, over the region of the heart; and, in the course of three days, the feeling of pain and constriction across the chest had disappeared. As the pain in the left arm still remained, he was ordered to use frictions with the ointment to it also, and almost immediate relief from that symptom followed the application. In the course of a fortnight from the time the Veratria was had recourse to, the most decidedly beneficial effects had been produced upon the disease: the pulse and action of the heart had become much more regular and natural, the difficulty of breathing had very much diminished, the complexion was completely changed, and exhibited signs of an unimpeded circulation; and this improvement went on gradually, under the occasional use of the ointment, along with a little medicine to act upon the bowels, so that, in about six weeks he could walk about, and go up and down stairs without inconvenience. As this case was one in which a cure could not be expected, the patient was left to himself with directions to rub the ointment whenever a return of pain or uneasiness rendered its employment necessary. This, he accordingly does, and by its means, is enabled to pursue his avocations with ease and comfort. Before taking leave of this case it is proper to state, that it was one of those in which the Veratria exerted its peculiar diuretic effects; for, during the first week it was used, no less than six pints of urine a day were evacuated by the patient.

CASE VI.

Mrs. C., a lady betwixt fifty and sixty years of age, has been ill about nine years. During the first three she suffered from dyspepsia and irregularity of the bowels, and, for six years, she has been affected with almost constant palpitation and difficulty of breathing; which symptoms she describes as having been on the increase, until at last she was obliged to confine herself to one floor of the house,

from inability to ascend or descend the stairs, and to refrain from walking, under the impression that the exertion might prove fatal.

She has violent pulsation over the region of the heart, along with an irregular and intermittent pulse, and complains, at times, of severe pain across the chest, and stretching down the left arm: her lips are of a purplish colour; her eyes dull; her countenance sallow; and she labours under considerable nervous irritability, accompanied by impairment of the memory! she has a degree of fulness in the right side, under the margin of the ribs, and her feet are generally cold, and a little swollen. For these symptoms she had previously been treated by bleeding, blistering, purgatives, and indeed, every thing possible appeared to have been done, without procuring any abatement of the disease.

From the disordered state in which the digestive organs evidently were, she was put under a plan of treatment similar to the one pursued in the preceding case, for about three weeks, but no diminution of the symptoms took place; and then the Veratria ointment of the usual strength, was ordered to be rubbed over the left side of the chest, and down the arm, every night. The first application afforded great relief to the palpitation and difficulty of breathing, and the pain in the arm was also considerably alleviated. In the course of a few days all the symptoms were nearly gone; the ointment was, however, directed to be applied occasionally, for about a month: and at the end of that time, the patient could walk with ease, three miles at a time, and returned home quite well, and has had no return of the disease since.

CASE VII.

The following case is given for the purpose of showing the effect which the Veratria has upon the circulation, in a disease attended by symptoms of great development of the heart's action, occasioned by simple hypertrophy of the walls of the left ventricle. Every one must have remarked the difficulty which there exists of moderating the pulsation of the heart and arteries, in this disease, and that, in consequence, it is no easy matter to procure even a temporary relief from the distressing sensations experienced by those who are affected by it. The cases of this kind, in which the ointment has been resorted to, are not sufficiently numerous to warrant the assertion, that decidedly beneficial effects will result from its application in every instance; but it will, nevertheless, be allowed, that the subject is worthy of attention, from the fact of its having already proved successful in doing so.

Mrs. S., a lady about sixty years of age, has, during the last five years, suffered much from violent beating of the heart, attended by strong pulsation in the neck, throbbing and giddiness in the head, and a continued whizzing noise in the left ear, along with feelings of anxiety, and considerable nervous irritability.

The action of the heart is strong, constant, and concentrated in a space over the situation of the apex, and communicates a powerful impulse to any thing placed on it; the pulse is very full, throbbing, and incompressible; the carotid arteries beat violently, and the patient complains much of the noise in her ear, and of giddiness; she has also confusion of ideas, and a feeling of heat and fulness in the head. She has considerable anxiety, and her sleep is interrupted by palpitation. There is some pain in the region of the heart; and all these symptoms are materially augmented by exertion; but this, from the sensation of lassitude which she almost constantly labours under, cannot be made to any great extent.

The bowels are generally costive, and require the employment of active purgatives, which are the only medicines capable of removing the uneasy feelings of the patient, to any degree; the digestive functions are very active, and the appetite preternaturally great. She complains neither of difficulty of breathing, cough, nor pain in the arm. In the previous treatment of this case nothing had been found useful, and as it did not appear that any bad consequence could arise from the external application of the Veratria, it was ordered to be rubbed over the region of the heart, in the usual manner, after purgatives had been administered, for a few days, to regulate the bowels.

After the first or second friction with the ointment, all the symptoms were materially diminished in intensity; the palpitation had greatly subsided; the pulse had become much softer and weaker; the anxiety, the pulsation in the head, the feeling of giddiness, the confusion of intellect, and the sensation of whizzing in the ear, had all disappeared, and the general health and appearance of the patient were much improved; but still some of the symptoms remained, not, however, to such a degree as to occasion inconvenience, and she is now in a comfortable state, and able to follow her household employments; though exertion, to any great extent, cannot be used without aggravating her complaints. From the manifest benefit experienced from the Veratria ointment, she uses it herself whenever, from any cause, an increase in the symptoms takes place, and with the effect of procuring immediate relief.

CASE VIII.

A GENTLEMAN, aged about sixty, of a weak constitution, of sedentary habits, and given to mental occupations, has laboured, for seven years, under slight palpitation, accompanied by feelings of anxiety and general languor, coming on at intervals, and increased by exertion; his pulse is feeble, rapid, and intermitting; palpitation over the lower part of the left side, not excessive, but attended with a painful sensation in the region of the heart, which is so augmented by walking, especially against the wind, as to compel him to stop and support himself on the nearest object. Respiration generally

unimpeded, except under these circumstances. The circulation in this patient is peculiarly languid, the face pallid, and the surface of the body cold. The nervous system is easily excitable, and he finds that continued exertion of mind very much aggravates all his symptoms. Appetite good, digestion easy, but occasonially accompanied by flatulence; bowels rather costive.

In the previous treatment of this case the same measures were employed as in those already related, but without the least effect. He was ordered to take a little opening medicine for a week, and then to apply the Veratria ointment over the region of the heart as usual. On the night after the first friction had been used, the patient got no rest in bed from the excessive nervous irritation which it had given rise to; his feelings of anxiety, and palpitation were so much augmented, that he would on no account repeat the application: these symptoms continued unabated for two days, at the end of which however the disease began to decline, and went on afterwards to do so until every vestige of it had disappeared, although no curative means whatever had been employed after the first application of the Veratria; and he still continues well.

CASE IX.

A LADY, about sixty years of age, was seized with a fit of fainting about sixteen years ago, in which she continued for an hour and a half, and ever since that occurrence she has been affected with palpitation of the heart, accompanied by frequent returns of the syncope. She now complains of palpitation, and difficulty of respiration, along with deep sighing, occasioned by a sensation of constriction, which she describes as extending over the chest, but unattended by cough; and the angles of the mouth are slightly bluish in appearance. The action of the heart is violent and irregular, and she complains of oppression and weight over the lower part of the left side of the thorax. The pulse is intermittent and irregular, and does not at all times correspond with the intensity of the heart's pulsations. She complains of occasional shooting pains in the arm, reaching to the points of the fingers; she is sometimes nervous, and low-spirited, and at intervals nearly free from all those symptoms; but not for any length of time, for they return again from very slight causes.

The appetite in this patient is at all times pretty good, but the digestion is not performed with a corresponding degree of facility, which renders a careful selection of the articles of diet, as well as attention to their quantity, necessary; and notwithstanding that these precautions are attended to, there is considerable flatulence and pain in the stomach during the process. The bowels are habitually costive, and require the employment of active purgatives from time to time, to keep them easy; and the lower extremities are generally cold.

Almost every form of treatment that could be devised, had in

this case been resorted to, during the long continuance of the disease; but the palpitations and faintings never ceased, although the general health by great care had been preserved tolerably good. To relieve the disordered state of the stomach and bowels, the patient was now directed to take opening medicine, combined with antacids, along with small doses of blue pill, for a week; and by these means the dyspeptic symptoms were, to a certain extent, removed, but the affection of the heart still remained nearly as violent as ever. The Veratria ointment was then prescribed of the usual strength, and ordered to be rubbed every night over the left side of the thorax. She did not return till the end of a week from this time, and from her own account, as well as from examination, she then appeared very much better. During the interval the palpitation and syncope had been much relieved, and indeed the latter had not returned. The feeling of tightness and oppression was quite gone; the pulse was materially improved in character, but still rather irregular. She was directed to persevere in the application of the ointment; her health and appearance became gradually amended, and at the end of a month from the time at which the Veratria was had recourse to, she was quite well.

External Application of Veratria in Neuralgic Affections.

In no class of diseases have the beneficial effects of the Veratria ointment been more strikingly manifested than in that which it is now proposed to bring under consideration; for in none are the symptoms productive of more distress to the patients, and by no other means can the same degree of relief be afforded in so short a period.

The external application of the Veratria has been made use of in neuralgic affections situated in every part of the body; it is, however, in tic-douloureux that the most remarkable and speedy change is effected in the state of the patient, for sometimes during the continuance of the first friction the paroxysm is brought to a termination, and does not again return; and if this be not the case, the following interval is at least of greater length than any that may have previously occurred, and the next accession of pain is less severe, and more easily removed.

The principal considerations to be attended to in the employment of Veratria in tic-douloureux are connected with the part of the face, and the extent of surface, in the which the pain is situated, and the length of time the patient has laboured under the disease. With regard to the first of these, it has been found that in cases where the affection is not confined to one particular point, but has extended itself along the ramifications of the nerve in which it has its seat, the symptoms may be removed much more speedily, and by means of an ointment containing a smaller quantity of the Veratria than when the contrary is the case; and this probably arises from the circumstance of their intensity in such instances being

much less, and from the surface under which the disease is actually situated being greater than where one spot only is affected, thereby affording an opportunity of making the application over a number of affected points at the same time.

In cases, too, of long duration, there is more difficulty experienced in performing a complete cure, than in those of a more recent date; but this does not appear to arise from the ointment having less power in removing the existing paroxysm in these instances than in others, for it almost always affords immediate relief, but from the habit of recurrence at stated intervals which its previous long continuance seems to have impressed upon the disease: even this, however, may be broken through by a little perseverance; and a recovery be effected, if not as quickly, at least as certainly, as in less obstinate cases.

For those forms of the disease which have been characterised as occupying the branches of the affected nerve, an ointment, made with twenty grains of Veratria to an ounce of lard, must be rubbed during the paroxysm, over the whole seat of the pain for fifteen or twenty minutes, or what is better, until the heat and tingling caused by the friction have been so great as to produce an impression on the feelings of the patient equal to that arising from the disease itself;* and when such an effect has been brought about, the friction may be discontinued for a short time, to allow the irritation occasioned by it to subside, so as to enable the patient to form a judgment of the relative intensity of the pain now, compared with what it was before the ointment was had recourse to. In many instances the paroxysm will be found to have been cut short; but if any degree of uneasiness remain, the part must be again rubbed with the ointment until the peculiar sensations arising from its use again show themselves, and this second application will, in general, be succeeded by a remission of the pain. Should an instance, however, occur of such obstinacy as to resist this repetition, the patient should still persevere, until the paroxysm be subdued.

In the great majority of cases to which this form of treatment has been applied, the removal of the paroxysm has been readily effected; and those in which a continuance of the friction, in the manner now recommended, is found necessary, are almost without exception cases in which the affection has been confined to one point.

For the purpose of obtaining the full effect of the Veratria as soon as possible in such instances, it has been used in the proportion of forty grains to an ounce of lard, and this may be done either from the very beginning of the treatment, or the quantity of the alcaloid may be augmented by five grains in each prescription until it attain to that amount. The former method is upon the whole to be preferred, because by it an immediate check is put upon the paroxysm in severe cases, without the necessity of continuing for a length of time the employment of weaker applications.

* It is of the greatest importance to attend to this caution, as the ointment *has no effect whatever* in removing the disease unless these sensations are induced.

It may not be out of place to repeat here the caution already given, against allowing even the most minute quantity of the Veratria to come into contact with the conjunctiva, an accident which may easily happen during the application of the ointment in affections situated in the face; as such a circumstance, although it may not be followed by danger, is nevertheless productive of so much irritation as to make it an object to guard against its occurrence.

The general instructions which have now been given regarding the plan to be pursued in the treatment of tic-douloureux, are equally applicable to cases of neuralgia, situated in other parts of the body. These last, however, are not so difficult of removal; and do not, so far as has been hitherto observed, require the ointment made use of to contain more than twenty grains to an ounce of lard. There is a form of this affection occurring in the loins, and extending down the thighs of women during the menstrual period, in which the application of the Veratria is found of great service, as affording an easy and expeditious means of removing it.

CASE I.

A LADY, fifty-five years of age, has been affected for the last thirty-six years with tic-douloureux in the cheek, and in the forehead above the eyebrow on the left side. From the commencement of the disease, she has had a paroxysm generally once a week, and at no time does she remember the interval to have been greater than fourteen days. Her sufferings during the continuance of the attack have been extreme, and have compelled her to confine herself to bed until its termination, and it has never lasted a shorter time than two days. In the intervals, however, she has been perfectly free from pain, and her general health has all along been tolerably good.

It appeared from the history of the case given by the patient, that throughout the long course the disease had already run, almost every kind of medical treatment had been put in practice without giving rise to any permanently good result; and in consequence of this circumstance, and as the symptoms appeared to admit of nothing but slight alleviation, if even that could be procured, she was ordered to keep the bowels open by the use of an aperient pill, and at the commencement of every paroxysm to take a small dose of acetate of morphia, and to repeat it every hour until the pain abated. She persevered in these means for two months, and experienced considerable relief; but although the violence of the symptoms was moderated, neither any diminution of the length of the attack, nor any change in the duration of the interval, could be observed.

Under these circumstances, and as the general health of the patient was beginning to suffer from the employment of the morphia, it was ordered to be discontinued; and she was directed to take small doses of strychnia, for the purpose of removing, if possible, a

paralytic affection of the levator muscle of the upper eyelid, and of the left side of the face, which had come on during the previous existence of the disease. This course was persevered in, until the convulsive twitchings, brought on by the medicine, became as strong as the patient could bear them, but without producing any effect upon the paralysis.

Her health was now much weaker, but her sufferings continued unabated ; and as it became a duty to call into use any means which might afford even the slightest prospeet of relieving the violence of the pain, she was directed, after the manner already stated, to rub over the forehead and on the side of the face, a portion of ointment, made with twenty grains of Veratria to an ounce of lard, till every uneasy sensation was gone. In about fifteen minutes this effect was produced ; but the paroxysm again made its appearance within two hours, and by a renewal of the friction for a few minutes it was again extinguished, instead of continuing two days, as usual.

To this there succeeded an interval of perfect ease for ten days, when the attack again returned, but not by any means so violently as before. On this occasion the same plan was pursued as in the preceding paroxysm, and the relief afforded was still more marked, for the pain was entirely removed by the first application. From this time the patient had only one or two very slight accessions, but these were at once cut short by the use of the ointment for a few minutes, and the disease entirely left her.

Not the least remarkable circumstance in this case was the change which took place upon the paralysis, for immediately after the first friction had been made use of, it was observed to have diminished considerably ; and by the time the patient was cured of the tic-douloureux, it had disappeared, and has not since in any degree returned.

CASE II.

Mr. C., aged forty, has laboured for sixteen years under tic-douloureux over the right side of the face and forehead, but particularly along the lower jaw as far as the mesial line, where it terminated ; and when the paroxysms were severe, the pain also extended itself to the same side of the tongue. During the whole course of the disease, this patient has hardly ever been free from pain ; and when an interval of ease did take place, his sufferings were renewed by the slightest causes, and more especially by mastication, which seldom failed to bring on an accession : his general health and appetite have been good, so much so, that he has frequently brought on an attack by inattention to proper rules for regulating his diet and regimen.

In the previous management of this case, under the supposition that the pain might depend upon decayed teeth, the patient had had several extracted without affording any relief. He was then

bled, generally and locally ; blisters and embrocations were repeatedly employed, but still no abatement in the severity of the symptoms took place. Along with these means he had also used large doses of carbonate of iron, arsenic, mercury, opium, morphia, sulphate of quinine, nux vomica, &c., without effect ; and when he came under treatment, he had been taking prussic acid in a quantity sufficient to affect the nervous system, and with as little success as from the measures which had before been resorted to.

As it appeared, from the history of the case, that the patient had been in the habit of indulging his appetite for food and drink to a considerable degree, and as his digestive organs appeared somewhat deranged, he was directed to take small doses of blue pill with Epsom salts ; and along with these means the Veratria ointment was prescibed, of the same strength as in the preceding instance ; and from the fact of there being no distinct interval observable betwixt the paroxysms, he was directed to rub it over the seat of the pain twice a day, and to renew the friction at any other time should the attack come on.

In the course of four or five days he returned very much improved in every way. His general health appeared better ; the disease had been greatly relieved, for instead of being almost always present, as had been the case for so long a time, it had been broken up into distinct accessions, and these were attended with comparatively little pain : he was therefore directed to discontinue the regular application of the ointment, and to employ it only when threatened with a renewal of the paroxysm : soon after this, he gave up the use of the internal medicines which had been prescribed for him, and he went on gradually improving under the influence of the Veratria alone ; the intervals became longer, and the fits less and less painful, until at the end of four weeks from the time he came under treatment, he returned home perfectly free from pain, and I believe has been so ever since.

CASE III.

A LADY, forty-eight years of age, has been affected with severe tic-douloureux, situated in the middle of the left side of the face, for a period of twenty-two years. She has made use of every possible medicine, particularly of carbonate of iron, which she had taken for three months in very large doses, but without experiencing any benefit.

The paroxysms are irregular in their duration, but never shorter than twelve hours, and they return generally at the end of three days, sometimes at the end of a week, but seldom longer ; and during the interval she is not altogether free from pain.

A short time before this patient came under treatment she had an attack of paralysis ; from which, however, she had recovered, with the exception of a slight palsied appearance of the countenance. There were no very marked symptoms of derangement in the diges-

tive organs, but it was thought advisable to put her under a course of medicine for a few days, similar to that made use of in the last case ; and the Veratria ointment, of the same strength, was ordered to be rubbed on in the usual manner when the next paroxysm occurred. This was accordingly done ; and after the friction had been continued for a quarter of an hour, the pain ceased entirely, and never came on afterwards in the shape of a regular attack.

During five weeks from this date, the disease appeared occasionally in the form of slight twinges of pain in the part previously affected, but these were at once removed by rubbing on a little of the ointment, and at length completely disappeared.

CASE IV.

A LADY, about thirty-five years of age, has suffered most severely and almost without intermission for the last eighteen months, from tic-douloureux in the cheek and side of the forehead. She has, during all that time, been put under the effects of nearly every variety of medical treatment that could be suggested, without producing any effect whatever upon the disease ; and the only remedy which has in any degree alleviated her sufferings is galvanism, but this also has failed in producing any permanent benefit.

This patient appeared to enjoy very good health : so that, without any other treatment being put in practice, it was determined upon at once to try the effects of the Veratria ointment. She was therefore ordered to rub over the affected part in the usual manner an ointment made with twenty grains of Veratria to an ounce of lard, which she accordingly did, and in ten minutes from the commencement of the friction, every vestige of the pain had disappeared, and it has never since returned.

CASE V.

A LADY, twenty-five years of age, has been for the last seven years affected with severe tic-douloureux, confined to one point, exactly in the situation of the supra orbitary foramen of the right side. The paroxysms have varied in duration, from sixteen hours to two days ; and intervals, extending from ten days to three weeks, but never longer, have intervened between the attacks of pain, and these, when short, have generally been followed by a recurrence of the symptoms in two or three days.

In this, as in the preceding cases, almost every means of cure appeared to have been already had recourse to, but, as usual, without procuring any permanent alleviation of the sufferings of the patient, except that small doses of acetate of morphia administered during the paroxysm, sometimes caused an immediate cessation ; but it was attended with this inconvenience, that if it did not pro-

duce the desired effect, all the symptoms were immediately aggravated to a great degree.

The digestive functions in this patient appeared to be considerably impaired, her circulation languid, and her extremities cold, especially during the attack. On these accounts she was put under a course of laxatives, combined with blue pill, for about a week, which was the means of removing these symptoms, but without producing any change on the disease itself. As it appeared that carbonate of iron was almost the only medicine which she had not previously made use of, it was prescribed in pretty large doses, and persevered in until it evidently appeared to exercise no effect whatever upon the symptoms; it was then given up, and about six weeks afterwards the Veratria was applied.

At the commencement of one of the accessions, she rubbed over the eyebrow and forehead of the affected side, part of an ointment made with twenty grains of the Veratria to an ounce of lard; and after the friction had been continued in the usual manner for about twenty minutes, the paroxysm was cut short. During the interval she was directed to apply, in the same way, an ointment made with morphia and hog's lard, in the same proportions as the other, twice a day, in order to prevent a return of the attack, but without producing the intended effect, for it again made its appearance in ten days.

With the view of making a decided impression at once upon the disease, an ounce of ointment containing forty grains of Veratria was ordered to be employed as before, whenever a new accession of the pain took place; and in a few minutes after its first application, there followed a great increase of the symptoms, which continued for about two hours, and then subsided, leaving no trace of the affection behind, neither has any renewal of it taken place.*

CASE VI.

A LADY, aged twenty-six years, who has been subject to occasional attacks of hysteria since her fifteenth year, has also since that period suffered from tic-douleureux, situated in the left eyebrow and extending itself up the forehead, in the course of the ramifications of the frontal nerve. The paroxysms in general take place once a month; but if the patient happen to expose herself to sudden alternations of temperature, she is almost certain of experiencing a violent attack on the following day, and in either instance it continues with unmitigated

* In this instance the Veratria has completely failed in giving permanent relief. The case was drawn up about the beginning of 1834, and the patient was at the time in the state above described; shortly afterwards, however, the disease again showed itself, and has ever since continued to come on at intervals. After repeated examinations, I have been unable to detect any organic disease; and although the other remedies mentioned in this volume have likewise been tried, no permanent benefit has been derived from them.

severity for about twelve hours, and not unfrequently terminates in sickness and vomiting, occurring at intervals for two days after, along with a considerable degree of intolerance of light.

As no plan of treatment which she had hitherto made trial of, had had any effect upon the disease, she was, without any other means being employed, directed to rub at the beginning of one of the accessions, part of an ointment of the usual strength, and in the manner already described, over the seat of the pain, and to continue the friction until relief was obtained. She did so, and in less than half an hour from the time the ointment began to be used, the paroxysm entirely left her.

On account of the presence, in this case, of considerable visceral derangement, the patient was treated by gentle laxatives, for a short time in the way recommended in those previously mentioned, and she was ordered to repeat the friction with the Veratria whenever the pain returned; but it has, I believe, never since been found necessary.

CASE VII.

A LADY, thirty years of age, has been for several years labouring under tic-douloureux, seated in the right orbit, and extending along the course of the frontal nerve as far as the top of the head. The paroxysms have been so violent as generally to confine her to bed for a day or two at a time, and have made their appearance with the greatest severity at the menstrual period, but in other respects she has all along been in the enjoyment of good health. She was ordered to rub the Veratria ointment, when the attack came on, over the whole surface occupied by the pain until relief was experienced: this she accordingly did on the first appearance of it: in a few minutes it was cut short, and never afterwards returned.

CASE VIII.

A GENTLEMAN, aged thirty-five, of a spare habit of body, subject to nervous feelings, and accustomed to sedentary occupations, has for the last seven years been seized with excruciating fits of pain, confined to the right half of the head, and returning by regular paroxysms at the end of about every third week. A short time before each attack comes on, he suffers much from restlessness and irritability, his pulse becomes augmented in frequency, and he complains much of impairment of memory; and after it has ceased, he does not return to his usual state of health for two or three days.

For this affection he was directed, during the paroxysm, to make use of frictions with the Veratria ointment, of the usual strength, over the seat of the pain; he first applied it to the forehead, and one rubbing was all that was requisite to remove the pain in that situa-

tion, but it still continued unabated in violence in the remainder of the affected region : to this part he was also ordered to apply the ointment ; and the pain there, in like manner, yielded to one application : no return of the symptoms has taken place, and he is now in good health.

Along with the hemicrania, there existed in this patient a considerable degree of irritability of the heart ; but a few frictions with the same ointment, made over the left side for five minutes every night, along with an occasional aperient pill, sufficed to remove this symptom permanently.

CASE IX.

Mrs. F., about thirty-eight years of age, had for the period of four years suffered from intense pain, confined to one spot in the loins, and which was not increased by motion. It came on in paroxysms, so frequent in occurrence, and of such duration, that she never experienced a longer interval than two days betwixt them; and her sufferings were augmented to such a degree during the period of gestation, that she was compelled to confine herself to bed for a great part of the time.

To bring about the removal of this affection, the patient had previously submitted to bleeding, generally and locally ; and blisters, tartar emetic ointment, frictions with stimulating embrocations, along with plasters of various kinds, but without in any degree alleviating the pain : she had also taken internally almost every medicine calculated in any way to procure an abatement of the disease, but still no relief could be obtained.

When this patient first put herself under treatment, several of the remedies previously had recourse to were again employed ; and along with these, frictions with croton oil were ordered over the seat of the pain, until a free eruption came out, but without effect. As a last resource, the Veratria ointment made with twenty grains to an ounce of lard, was directed to be applied in the usual way, and in a very few minutes every vestige of the pain had disappeared. She has been since entirely free from it, and is now in the enjoyment of the best health.

CASE X.

A young lady, about twenty-four years of age, has been affected with most violent pains in the loins and thighs, during the menstrual period, for about eight years. The pain has in general continued, without intermission, for three days, and has then subsided of its own accord.

Many attempts have been made in this case to effect a cure ; the patient has taken opium, preparations of morphia, Dover's powder,

and other sedative remedies, but without experiencing any permanent benefit, for at each monthly period the pain has manifested itself with the same severity as before. From the effects which the Veratria had been already observed to have upon similar diseases, an ointment made with twenty grains of the alcaloid to an ounce of lard, was directed to be made use of over the loins, with the effect of immediately removing the pain, and it has not again returned.

CASE XI.

The eleventh case happened in a lady about thirty-three years of age; and except that the disease had in this instance continued for nine years, its previous history, course, and termination, were so precisely similar to those of the preceding case, that any more particular relation appears unnecessary.

CASE XII.

An elderly gentleman, rather corpulent, and of sedentary habits, had suffered severely for nine months from a fixed pain seated in the lower part of the spine. It had continued during the whole time almost without intermission, and at last nearly prevented him from remaining in the erect posture. The Veratria ointment was directed to be rubbed over the affected part, and immediately removed the pain; the patient was, however, ordered to apply the frictions, night and morning, for two weeks, to prevent a return, and he has since had no symptoms of the complaint.

CASE XIII.

Mrs. A., a middle-aged lady, has suffered severely for about five years from a painful affection in the situation of the os coccygis, which is much increased by sitting, or riding on horseback. For the cure of this disease, she has been under every variety of treatment, both internal and external, and has spent much time at the principal watering-places, but the pain has continued.

She was directed to make use of friction with the Veratria ointment over the affected part, and the first application afforded complete relief. At the end of twelve hours the pain again came on, but was a second time as easily removed; and as there seemed to be a tendency to a recurrence of the symptom, the ointment was ordered to be repeated night and morning, until the disease had ceased again to appear. In the course of ten days the patient was quite well, and has since continued to be so.

External Application of Veratria in Rheumatism.

From what has been said in the foregoing chapter on the subject of the external employment of Veratria in neuralgia, it will not be requisite to introduce here any further remarks, except such as are exclusively applicable to the effect produced by it upon rheumatism in its various forms.

In the acute form of the disease, the Veratria ought not to be employed, if there be active inflammation going on in the affected parts; as it is much better to treat the acute symptoms in the usual manner; but when these are on the decline, the ointment may be had recourse to with advantage.

From the extent of surface affected in acute rheumatism, and from the quantity of ointment which is on that account required for the friction, the proportion of Veratria ordered in the prescription should not be so great as in the diseases already treated of; for in this, as in other affections, the strength of the ointment should always bear a certain relation to the space over which it is to be applied.

In cases where the rheumatism is general, or where it is seated in several joints at the same time, ten grains of Veratria to an ounce of lard will make an ointment sufficiently powerful for every purpose;* but where it is confined to one or two joints, or where it has assumed the chronic form, the quantity employed may be varied according to circumstances, from ten to twenty or more grains, and the friction may be continued in either case as long as the patient can bear it; or if it be requisite to specify a fixed portion of time—as a general rule, it may be stated, that in the earlier stages of the disease fifteen minutes, and in long standing examples twenty, will be enough to remove the existing pain.

When the case to be treated is decidedly chronic in its nature, *much perseverance* is requisite, particularly if extensive organic changes in the parts have taken place; the best directions are, to rub the affected joints every night for the time specified, until the pain has disappeared; and at any future period, when from change of weather, or other cause, it again returns. In slight acute affections, arising from cold, one or two applications, continued until the heat and tingling manifest themselves, often effect a cure.

The directions which have now been given will, in most cases, prove sufficient to enable the practitioner to make use of the Veratria ointment in the more topical forms of rheumatism, as well as in those already pointed out: and little more appears requisite than simply to enumerate such as it may be applied in with the most evident advantage.

In lumbago, sciatica, rheumatic affections of the muscles over the

* In this form of the disease, it will be found advantageous to administer some one of the preparations of Veratria, already recommended, at the same time that the frictions are used.

chest, or in other parts, the symptoms may be relieved almost immediately by the first friction ; and in more obstinate cases, a few more will, in general, have the desired effect.

CASE I.

Mr. G., a gentleman about forty-eight years of age, had been for some time subject to occasional severe attacks of acute rheumatism, affecting chiefly the joints of the extremities, and attended with a considerable degree of general fever. For several days before he came under treatment he had been labouring under very acute symptoms of the disease; he had had a good deal of fever, a quick throbbing pulse, much heat of skin, and the joints of the elbows, wrists, knees, and ankles were swollen red, and so very painful as to render motion to any extent impossible.

In this case the most active measures had already been put into practice. Venesection had been freely employed, he had used large and repeated doses of purgatives, of various diaphoretic medicines, and colchicum ; and along with these means the antiphlogistic regimen had been carefully pursued since the commencement of the attack, but no abatement in its violence had taken place.

As everything likely to effect a cure in the usual way appeared to have been resorted to, the previous internal treatment was ordered to be persevered in, and at the same time an ointment, consisting of ten grains of Veratria and an ounce of lard, was directed to be rubbed upon the affected joints, for ten minutes at night, and again the following morning. When the patient was visited next day, his rheumatism was nearly gone. The ointment had occasioned a considerable increase in the heat of the parts, but the inflammation and swelling were greatly diminished, and the pain almost removed ; he could now use the affected joints with perfect ease, and there was no return of the symptoms for some days. He then experienced a slight renewal of the complaint in one of the ankles ; and at the very first appearance rubbed the ointment, of his own accord, over the inflamed surface for the usual time, but although it produced sensations of heat and tingling as usual, yet no amelioration of the pain took place : the friction was therefore ordered not to be repeated till twelve hours had elapsed, and at the end of that period one application entirely removed it.

CASE II.

A boy, twelve years of age, and of a delicate habit of body, had been labouring for three or four days under an attack of acute rheumatism, attended by a good deal of febrile excitement ; the pulse was quick, the skin hot, and the tongue dry, and slightly furred ; both his ankles and knees were swollen to a considerable degree,

had a red and inflamed appearance, and could not be moved, on account of the pain.

On the second day of the disease, leeches and fomentations had been applied to the affected joints, and internally he had taken colchicum and diaphoretics, but with very little benefit. He was therefore ordered to have an ointment made with twenty grains of Veratria to an ounce of lard, freely rubbed over the seat of the pain, for about fifteen minutes at bed time.

Next morning the patient was almost well. During the night the pain and fever had disappeared, and he could walk about and move his limbs with perfect ease; the inflammation and swelling had to a great degree subsided, and the joints were restored to nearly their natural appearance. In two days afterwards, although the ointment had been only once applied, no trace of the affection was left.

CASE III.

Mr. G., forty-five years of age, and of a robust constitution, was in consequence of exposure to cold and wet seized with a rheumatic attack, which was confined to the knee and ankle of the right side, and accompanied with some degree of fever; he was ordered on the evening following the accession of the disease to take antimony combined with calomel; but next day the symptoms did not appear at all to have diminished. The affected joints were swollen, inflamed, and painful, and the quickness of pulse, and heat of skin still continued the same.

Part of an ointment made with twenty grains of Veratria to an ounce of lard, was now directed to be rubbed over the seat of the pain for the usual time; and on the morning after the first application, the patient could walk about the house; the pains, inflammation, and swelling had almost disappeared, and the febrile symptoms were gone: by continuing the same treatment for two days longer, he was able to follow his business, and no relapse afterwards occurred.

CASE IV.

Mr. S., a stout gentleman, aged about fifty, had been in the early part of his life much exposed to cold and moisture, which brought on an attack of lumbago, and since that time he has had many returns of the disease. In addition to this, he has also been affected with chronic rheumatism, confined principally to the joints of the hip and knee of the left side. The motion in both is very much impeded; over the hip-joint there is an evident fullness, and when any extensive movement is impressed upon it there is a distinct crackling noise elicited, and a similar feeling is communicated to the patient.

The knee is also the seat of considerable swelling, and pain which

is increased by pressure, but particularly by attempts at motion, and the same noise and sensation are present when it is bent and extended as in the hip-joint. The swelling in both situations is white in appearance, puffy, and somewhat elastic. The sufferings of the patient are much aggravated by change of weather ; and attempts at motion in the affected joints are attended with so much pain that he is compelled, in walking, to lift the whole extremity without bending it, by exerting the muscles of the opposite side.

For the removal of the disease, he had proviously resorted to most of the remedies in common use. Besides having taken internally every thing that appeared likely to afford relief, he had employed to the parts themselves, bleeding, counter-irritation by means of blisters, &c., and embrocations of every kind ; all of which had failed in procuring any other than a temporary abatement of the symptoms.

Under these circumstances this case first presented itself, and with the view of giving a fair trial to external applications, the affected parts were ordered to be rubbed with croton oil twice a day, until a very free eruption came out, and this plan was followed with considerable success for about six weeks, during all of which time the irritation was kept up by repeated frictions with the oil. Even this, however, at last began to lose its effect ; and the pain, which had at first diminished considerably, now appeared to be rapidly on the increase, and as there was no objection to the application of the Veratria, it was prescribed.

An ointment made with twenty grains of the alcaloid to an ounce of lard, was ordered to be rubbed for twenty minutes twice a-day over the knee and hip of the affected side ; and after it had been made use of a few times, the troublesome symptoms began to decline. The pain went quite away, and the swelling and the rigidity became rather less : so that at the end of ten days or a fortnight, the patient could bend both the diseased joints, and could walk almost without inconvenience. The disease itself is, of course, not removed ; but he can now take exercise on foot, and move the articulations with freedom.

In changeable weather a slight return of the pain sometimes takes place, but this is at once removed by rubbing the part with the ointment for a few minutes ; and the patient is now in a comfortable condition.

CASE V.

Mr. B., a gentleman about forty-five years of age, was seized two years ago with an attack of rheumatism which terminated in a chronic affection of the joints of the right arm and hand. He expe-renced great difficulty in making use of the muscles of the shoulder from the pain which always attended upon any efforts at motion : the elbow-joint was stiff and painful, and he was obliged to carry the fore-arm in a sling. The articulations of the fingers were

swollen, and also gave pain on motion, so that the patient could not use them in writing; but had been, in consequence, in the habit of employing the left hand for that purpose.

This patient had previously applied many remedies, without obtaining benefit from them, and he was now ordered to rub the affected joints twice a day with the Veratria ointment; and in a day or two all uneasiness had left the shoulder and elbow, and he could now move the arm with facility. The disease in the joints of the fingers was also much relieved, but the swelling appeared nearly the same; he was directed to continue the application of the ointment to them occasionally, until it produced some effect. He returned at the end of about six weeks, and at that time the pain and swelling had disappeared, and he had recovered the entire use of the hand.

CASE VI.

Mrs. P., about fifty-two years of age, has been for the last twelve years affected with chronic rheumatism in the joints of the inferior extremities, but particularly in the hip and knee of the right side. Her sufferings for a considerable time have been augmented by variations in the state of the weather; and, for the last five years, the joints in which the disease is situated have been so painful and rigid, as to oblige her to make use of supports in walking; the knee is much swollen, and gives a sensation of crepitus when moved.

In the previous treatment of this case also, remedies of every description had failed to do good; and in order to try the effects of the Veratria, it was directed to be rubbed on twice a day in the usual manner, and to be persevered in for some time. At the end of a fortnight the symptoms were much relieved, and she could move the limbs with some degree of ease; she went on improving, and after six weeks could walk three miles at a time with little difficulty, and without support.

CASE VII.

Mr. K., a gentleman thirty-five years of age, has been the subject of repeated attacks of lumbago, for several years, and the pain has occasionally been such as to confine him to bed for a fortnight at a time. When the disease first made its appearance the patient was bled and blistered repeatedly, and took many remedies internally, but particularly colchicum, and these means were always followed by relief.

During the two attacks which had occurred previously to that in which the Veratria was used, he had supplied sinapisms to the seat of the pain, and taken large doses of colchicum, with the effect of removing the symptoms; but not till the plan had been continued for about three weeks.

One evening he had a return of the affection, and when visited next day, he was lying in bed in great pain, and could not be moved in any direction. An ointment, made with twenty grains of Veratria to an ounce of lard, was immediately ordered to be rubbed across the loins for fifteen or twenty minutes, and to be repeated at night; and in the event of the second friction failing to procure relief, he was directed to take fifteen grains of Dover's powder, with thirty-eight drops of vinum colchici, at bed-time; this last prescription, however, he did not find it requisite to make use of, and next day he could move himself about freely, and without experiencing any pain. To guard against a recurrence, he persevered in the use of frictions night and morning for a few days; he then discontinued them, and has since been quite free from the complaint.

CASE VIII.

This case was one of severe sciatica, occurring in a gentleman about thirty years of age, and bearing a considerable resemblance in its history to the foregoing: the previous treatment pursued was much the same, and in like manner freed the patient from the existing attack; but did little towards establishing a permanent cure. The Veratria ointment in one application removed the pain, and in a few more completed the recovery of the patient.

CASE IX.

A gentleman, thirty-three years of age, had, about eight years ago, an attack of acute rheumatism, during which the larger joints became affected, and after the violence of the disease had been subdued, there still remained a degree of pain and swelling around the articulations of the tarsus and ankle, of both sides; and to these symptoms there has latterly supervened so much rigidity as to disable the patient almost entirely from walking. When an attempt at motion is made, he is compelled to raise the feet from the ground without bending the ankle joints, and he experiences great pain in pressing upon the ball of the great toe.

In this case, the patient was directed to rub the Veratria ointment over the diseased parts twice a day; at the end of a fortnight the pain was gone, and the attack completely removed.

External Application of Veratria in Gout.

In the treatment of gout, Veratria, both internally and in the form of friction, is a remedy of considerable power. When administered by the mouth, its action upon the disease is not at all unlike that of colchicum, but rather more mild; and in cases where

the affection appears to be more general in its nature, much benefit will be found to arise from its exhibition in this manner, as well as from the ointment. During the height of an acute attack, the friction should not at once be resorted to; for in this disease, as in rheumatism, the local remedy will be found most advantageous after the violence of the constitutional symptoms has been removed, by other treatment: in some instances, however, it has been of much service when made use of at the time an attack was threatened, by warding it off, or making the subsequent stages less severe.

The general directions for applying the Veratria ointment in gout, are nearly the same as those already given for its use in rheumatism. Fifteen or twenty grains of Veratria to one ounce of lard, will be sufficient to begin with, and the friction should be continued until the tingling sensation be freely produced: indeed, the quantity of ointment used, and the duration of the friction, are of little moment without attention to this circumstance.

In a late work, Sir Charles Scudamore has made some very judicious remarks on the effects of Veratria ointment, and on its manner of application in gout. His experience, in most essential particulars, confirms what I have myself observed, and as illustrations of the utility of the remedy, I shall avail myself of three of the cases he has given, and shall here insert them.*

CASE I.

"A LADY, aged forty-four, subject to severe attacks of regular gout, in an unusually severe paroxysm, derived great benefit from the internal medicines which I prescribed; but she remained entirely lame, from the tender, swollen, and rather painful state of the ankle-joint and foot. I directed the Veratria ointment, in the strength of ten grains to the ounce; and the good effects of the application were very quickly shown. She described that she was in considerable pain at the commencement of the friction, but that it abated at the end of twenty minutes, and was exchanged for strong prickings like those from electric sparks, and a remarkable warmth, rather agreeable than the contrary. These sensations lasted about an hour. On the following morning the swelling of the ankle and foot was much reduced, and allowed of standing. A further perseverance with the remedy proved very beneficial; and this lady, by means of it, and further general treatment, recovered in the most favourable manner."

CASE II.

"A GENTLEMAN, aged sixty, one of the greatest martyrs to gout that I ever saw, was seized with sciatica and lumbago, at the same

* Principles and Treatment of Gout, 1835.

time that he was affected with sharp gout in the knee. There was much error in the state of the biliary system. I prescribed mercurial evacuants, sudorifics, and sedatives. After six days of this treatment, although improved in his general condition, he complained of continued suffering from the sciatic nerve, and great, though not equal, distress from the knee. The Veratria ointment was rubbed in upon each affected part. It produced the sensations of heat and electric-like prickings for nearly an hour, and very decidedly relieved the complaint. It was repeated three or four times with complete success. The skin became irritated, as if by a strong rubefacient, but no sore followed. The patient was highly gratified by the effects of the remedy."

CASE III.

"ANOTHER patient, too anxious for the quickest relief, used the remedy on the second day of an attack of acute gout in the foot, the part not being so exquisitely tender as to prevent moderate friction. Active evacuants had been taken at short intervals with full effect. The proportion of the Veratria was ten grains to the ounce. No particular sensations ensued from the friction, and no apparent benefit resulted. Five grains of Veratria were added, and the friction was followed up for a longer time. Now the patient became very sensible of the peculiar sensations before mentioned. On the following day, there was a very manifest abatement of the gout; and the patient acknowledged the improvement. In conjunction with its further use, I prescribed the mild colchicum aperient draught and alteratives. The recovery was uninterrupted, and a favourable convalescence was established in the course of a fortnight."

External Application of Veratria in Dropsy and Paralysis.

BESIDES the diseases mentioned in the preceding chapters, I have employed the Veratria ointment in two others, Dropsy and Paralysis. In my account of Veratria, several cases of these are mentioned in which friction with the ointment appeared to have been of great service; but although the Veratria most certainly acts as a diuretic, as well as a powerful stimulant of the nervous system, subsequent consideration has made it appear doubtful whether or not the amount of effect produced, was not augmented by the other treatment pursued at the same time. The subject, however, is open to investigation, and on this account I shall give such genernal directions for the use of the ointment in these diseases, as may be sufficient for such as may wish to try its effects, leaving it to future experience to decide upon the utility of the treatment.

In dropsical cases it is indispensably necessary before the Veratria be applied, that every attention should be paid to all the organs, upon a derangement of which, either in structure or friction, the

effusion may depend, otherwise the anticipated effects may not be produced.

If, after a careful examination, nothing wrong, of importance, can be detected, the ointment may then be had recourse to ; but if the contrary be the case, the diseased state, whatever that may be, should, if possible, be first removed, and then the treatment may be proceeded with.

The same rule before laid down, as to the relation which the strength of the ointment ought to bear to the extent of surface over which it has to be rubbed, and to the state of the patient, must here be kept in mind. But as the frictions should, if possible, be made over the whole surface under which the effusion exists, and as this must vary with the situation and extent which it occupies, it is evident that no prescription applicable in every instance can be given, except that the quantity of the ointment rubbed in each time, should not, in adults, contain less than two, nor more than four or five grains of Veratria; and the friction should be continued for about twenty minutes, and repeated once or twice a-day. If the plan of treatment is to be of service, the diuretic effect will probably show itself in a few hours, and the repetition of the friction must be regulated by the effect produced.

As an illustration, the following case may be introduced, leaving it for others to judge whether the rapid disappearance of the watery effusion was the result of the large quantity of diuretic medicine the patient had previously taken, or whether it arose from the action of the Veratria.

J. Burnell, Esq., of Theresa Lodge, Pocklington, near York, aged thirty, came under treatment in the summer of 1830. About a year previously, he was attacked with ascites, which proved so very obstinate that, although he was put under almost every plan of treatment which could be devised by his medical attendants, during nearly the whole time, the disease suffered no abatement, but on the contrary appeared to be increasing rapidly. At the time he presented himself, the dropsy had become general ; his lower extremities and scrotum were swollen to an enormous size ; the abdomen was completely distended with fluid ; and the organs within the chest were much impeded in their functions. There was great difficulty of breathing, attended with cough and slight watery expectoration ; the pulse was small and intermittent, and the patient was unable to remain in the horizontal posture for one minute, without experiencing the most distressing sense of suffocation ; the distension of the legs increased to such a degree that serous fluid oozed from them ; and altogether, the case was one of the most severe ever witnessed.

The previous treatment of this case had been as active as possible ; diuretics and drastic purgatives of almost every kind had been employed, without producing any other effect than weakening the patient ; and a course of mercury, continued during some time, had been equally unsuccessful. The flow of urine was less than an En-

glish pint in twenty-four hours; and could not by any means be made to exceed that quantity.

For six weeks after he came under treatment, the plan pursued was similar to the one already described. Mercury, squill, the acetate and super-tartrate of potass, digitalis, colchicum, spirit of nitrous ether, juniper, broom seed, &c. were all had recourse to without the slightest benefit, and the same want of success attended the exhibition of elaterium, gamboge, and other drastic purgatives; these last produced large watery stools, but without bringing about any apparent diminution of the swelling. There now appeared no hope of recovery: all the means likely to procure relief had been put in force, and had only added to the distress and debility of the patient, so that it became necessary to abandon them, and look out for some other means of cure.

In this emergency it was resolved upon to make trial of the Veratria externally, and a box of ointment, made with four grains of the alcaloid and an ounce of lard, was accordingly directed to be rubbed over the surface of the abdomen at bed-time. The whole quantity was applied; and in the course of the night, and following morning, the patient evacuated no less than eight pints of urine, which had caused a marked diminution of the swelling, both in the abdomen and extremities, and was attended with considerable relief to the breathing and circulation; but, along with these effects, the medicine had caused such an alarming prostration of strength as to render the administration of stimulants absolutely necessary, for three days before the ointment could be repeated; at the end of that time, when the patient appeared somewhat recovered from his weakness, a fresh quantity was prescribed, in which, however, a less proportion of the Veratria was used, owing to the violent constitutional symptoms caused by the first. On this occasion, two grains only were rubbed on, yet the diuretic effects were scarcely less marked than before; and these were again accompanied by a degree of debility which, although not so great as in the preceding instance, still made it a matter of necessity to repeat the stimulants, and to delay the third application for five or six days.

On both occasions, after the first effects of the ointment had subsided, the quantity of urine diminished considerably, but the swelling became daily less in magnitude, and the patient went on improving in a manner that could not have been anticipated. On the fifth or sixth day from the second rubbing, a third, with an ounce of ointment containing two grains of Veratria, was directed to be made use of, as before; and from this time the dropsy rapidly disappeared; the patient gained strength sufficient to enable him to take active exercise; and at the end of three weeks from the first application of the Veratria, he was completely cured, and has since had no return of the disease.

The only collateral treatment employed in this case, along with the Veratria, consisted in the daily exhibition of purgative medicine, not with the view of producing any change upon the disease by its

means, but only for the purpose of obviating the constipating effects of the remedy.

In paralysis, the Veratria is worthy of a further trial; but my late experience with it does not warrant the assertion that it is a decidedly useful remedy. In partial paralytic cases it might be used, and probably with some degree of advantage, but in severe cases it appears to be of as little service as other remedies.

The friction ought to be made along the course of the affected nerves, two or three times a day, until the tingling is produced; but, as a general direction, fifteen or twenty grains, to an ounce of lard, will be strong enough; and frictions of ten to twenty minutes' duration each, will be sufficient for the purpose of giving it a trial. The tincture of Sabadilla, however, is a much better remedy and certainly deserves the preference.

Properties of the Constituents of the Veratria of Commerce.

It has been already stated, that M. Couerbe has succeeded in obtaining four alcaloids from the Veratria of Commerce, viz., *Veratrine*, *Veratrin*, *Sabadilline*, and the *Mono-hydrate*, or *Gum Resin of Sabadilline;* we have also described the processes by which these substances may be procured separately, and shall now give a few further particulars of their history and properties.

Veratrine.—M. Couerbe considers Veratrine as the pure active principle upon which the properties of Sabadilla seeds depend. It is white, solid, and friable; insoluble in water, but very soluble in alcahol and ether, and forms crystallizable salts with acids. Its medical properties, may be considered precisely similar to those of Veratria.

Veratrin.—This substance has a brown colour, it is insoluble in water, and differs from the preceding in being insoluble in ether. It is soluble in alcohol; with nitric acid, it forms oxalic acid. Its medicinal action has not been tried, but may be inferred to be similar to that of Veratria.

Sabadilline.—When in a state of purity, Sabadilline is white and crystalline; it is very acrid to the taste, it is completely soluble in water and in alcohol, but insoluble in ether; it combines with sulphuric acid, and forms a crystallizable sulphate. It is distinguished from Veratria by its solubility in water, by its insolubility in ether, and by its forming crystals. The Sabadilline which I have employed, is in the form of a fine light brown powder, and not so pure as that obtained by M. Couerbe. In this state it is very soluble in water and alcohol, but insoluble in ether, and has the following properties.

Its taste is acrid but not bitter, and it produces a slight sensation of cold when first applied to the tongue; when applied to the nostrils it irritates the mucous membrane and occasions sneezing, but not so violently as Veratria. When administered internally in the dose of one-sixth part of a grain, every two hours, it gives rise to effects very similar to those produced from the administration of

Veratria and its salts, though in a much less degree. It excites a little heat in the stomach, but does not act upon the bowels, and after several doses have been taken it occasions sensations of tingling in the extremities, but very slightly. Internally it has effects on disease similar to those of Veratria, but it is much inferior as a medicinal agent.

When used in the form of embrocation or ointment, Sabadilline has more powerful effects. It excites a peculiar feeling of heat and pulsation in the part where it is rubbed, and this is accompanied by a sensation, as if the part had been severely bruised, which continues often for some hours.

The ointment employed may contain from fifteen to twenty grains to an ounce of lard, and may be rubbed for fifteen or twenty minutes, or until the heat and pulsation show themselves; sometimes a slight eruption comes out on the skin where it is rubbed, but it is not attended with an inconvenience. I have used the ointment of Sabadilla in friction, in neuralgic affections, and in rheumatism, gout, &c. Its effects are similar to those of Veratria, but not so beneficial. It cannot, however, be said that the remedy has had a fair trail, as very little of it has as yet been made, and what I have used has not been in a state of purity.

Mono-hydrate of Sabadilline differs nothing in general character from Sabadilline, except that it has a yellowish colour, and is incrystallizable; it has nearly the same chemical constitution, and indeed M. Couerbe considers the two substances as differing in nothing, except that Sabadilline has two atoms of water of crystallization, whilst the mono-hydrate has only one. From their similarity in these respects it may be inferred that they have similar medical properties, although the mono-hydrate has not hitherto been used.

The only thing connected with this part of the subject which remains to be noticed, is the use of the salts of Veratria externally. Several of these have been employed, and appear to be possessed of effects very similar to those of the base itself. Either the sulphate, acetate, or tartrate, may be used, in the proportion of from ten to fifteen grains to an ounce of lard; they make an ointment that occasions a powerful sensation of heat and tingling, when rubbed upon the skin, and may be resorted to, and perhaps with advantage, when Veratria, as sometimes happens, has become less efficacious from continued use.

CHAPTER II.

Medicinal Employment of Delphinium Staphisagria, and its Active Principle, Delphinia.

Stavesacre, a biennial, *Polyandria Trigynia*, Linn. *Ranunculaceæ*, Juss. *Maltisiliquæ*, Linn. a native of the south of Europe.

The *Delphinium Staphisagria*, and its active principle Delphinia, are the next substances possessed of properties similar to those of Veratria, of which I shall give an account. The seeds of the plant are the part used in medicine ; they are of the size of small peas, triangular, and sometimes four sided ; they are rough, wrinkled, and slightly curved, dark coloured externally, and yellowish white within ; their smell is disagreeable, and their taste bitter, acrid, and burning.

Stavesacre seeds in some quantity, act upon animals as an acrid irritating poison ; their effects are chiefly confined to the mucous membrane of the stomach, in which they sometimes excite inflammation ; but the nervous system appears to suffer most, especially if death come on soon after the poison has been administered. In the human subject, when taken internally, they excite vomiting and purging, and act also as general irritants and sialogogues.

Stavesacre was at one time employed as a cathartic and anthelmintic, but is now laid aside, on account of the violence of its effects. It is still, however, used externally in infusion for the treatment of skin diseases, particularly scabies, and, in powder or ointment for destroying pediculi. In the form of a concentrated tincture, I have employed it as an embrocation in the treatment of rheumatic affections, with considerable advantage. It causes sensations of heat and tingling, very similar to those arising from the use of Veratria, and should be rubbed until these effects show themselves.

Preparation of Delphinia.

Delphinia was discovered in the seeds of the *Delphinium Staphisagria*, by MM. Lassaigne and Feneulle, in the year 1819.* It may be obtained by several processes, but that recently given by M. Couerbe appears to afford the purest result. It is as follows. A saturated tincture of Stavesacre seeds is to be evaporated to the consistence of a thin extract, and treated with water, acidulated by sulphuric acid : this solution, when filtered, is to be precipitated by ammonia. The precipitate, after being freed from its water, is to be taken up with alcohol, and again reduced to the consistence of extract, which is likewise to be dissolved in acidulated water ; to this solution, when filtered, a small quantity of nitric acid is to be added, as long as any precipitate falls : the liquid freed from this precipitate is again to be thrown down by ammonia, and the powder dried. This is the Delphine of Commerce ; but, like Veratria, it is a compound substance, and consists of *resinous matter*, *Staphisaire*, and *Delphine:* the *Delphine* is separated by treating the powder with ether, which takes it up and leaves the *Staphisaire.*

When in a state of purity, Delphinia is white, pulverulent, and without smell ; but, like Veratria, when applied to the mucous membrane of the nose, it occasions sneezing, along with an abun-

* Annales de Chimie, tom. xi. xii.

dant secretion of mucous ; its taste is at first bitter, and afterwards acrid ; and it acts upon animals in the same manner, but more energetically than the seeds from which it is prepared.

When heated it melts, and somewhat resembles wax in appearance ; and on cooling, it becomes brittle like resin. It is very sparingly soluble in water, but yet in sufficient quantity to communicate a bitter taste to the fluid. In alcohol and ether it dissolves readily, and these solutions have the property of rendering syrup of violets green, and of restoring the blue colour of litmus, when reddened by the addition of a portion of acid. It combines readily with acids, and forms neutral salts, which are possessed of much bitterness and acridity, and it may be precipitated from solutions of these in the form of a jelly, by the addition of an alkali.

Internal Administration of Delphinia and its Salts.

Pure Delphinia has little effect upon the mucous membranes of the stomach and bowels. It may be administered in some cases to the extent of three or four grains a day, in doses of half a grain each, without exciting vomiting ; in this quantity, however, it sometimes operates upon the bowels, but causes very little irritation. In most instances it acts as a diuretic, and occasions a considerable flow of pale urine. When taken to the extent of a few grains, it gives rise to sensations of heat and tingling in various parts of the body, similar to those which are produced by rubbing it upon the skin, and its other effects are very nearly the same as those of the salts of Veratria. The salts of Delphinia act much in the same manner, but there is nothing to give them a preference to the alcaloid itself : both have been used in the same diseases as the preparations of Veratria, and appear to exercise a similar action.

External Application of Delphinia.

Delphinia, when in a state of purity, is entirely soluble in alcohol and ether ; but neither of these circumstances can be relied upon as a test of the efficacy of the medicine ; for, like Veratria, it may have the appearance of being almost chemically pure, and yet be possessed of little activity in the removal of the affection, for which we may wish to apply it. The test already laid down, with regard to Veratria, is the one which should in this instance be resorted to ; namely, that unless a solution of Delphinia in alcohol, in the proportion of four grains to a drachm, occasion a distinct sensation of heat and prickling, when rubbed for three or four minutes upon the forehead, the specimen ought not to be used, for if this be not attended to, no beneficial effect will arise from its application.

There are a few points in which Delphinia differs from Veratria, in its action upon the skin, which require to be shortly noticed. Veratria, when rubbed upon the cuticle, produces a strong sensation of tingling, or rather a feeling similar to that produced by re-

ceiving a succession of small electric sparks on an uncovered part of the body ; whilst Delphinia gives rise to a sensation of burning, not unlike that which manifests itself a short time after the application of a blister ; but not to an unpleasant degree, unless the friction have been carried too far. They differ also in the duration of the effect produced, as that caused by Delphinia is generally more powerful and durable than when Veratria is used.

In the great majority of instances, Veratria may be rubbed upon the skin for the usual time, without causing any great degree of redness on the part ; but in almost every case, a blush pervades the surface, over which the Delphinia has been applied, and this continues during a length of time, varying from a few minutes to an hour or two, but in no instance, as yet observed, has it gone on to eruption. This property of stimulating the capillaries of the surface of the skin, may add much to the power of Delphinia, particularly in paralytic cases.

So far as the comparative merits of the two substances have been examined, they appear to be of nearly equal value as medicinal agents, for in most instances they seem to have the same power in removing similar diseases. There are one or two particulars, however, in which they differ, and which in certain instances may give a preference to the Delphinia. The diseases in which it has been chiefly employed, are tic-douloureux, paralysis, and rheumatism. In the first of these, when the affection is seated in the tongue, or at the point where the infra-orbitary nerve escapes from its foramen, the use of the Delphinia is to be preferred, because it can be applied to the tongue, or rubbed on the gums without occasioning irritation of the mucous membrane, a circumstance of great importance in the treatment of these forms of the disease. It appears also, upon the whole, better adapted to the treatment of paralytic cases than the Veratria, but principally on account of the property just mentioned, which it possesses, of exciting the circulation in the diseased part.

The manner of applying Delphinia is the same as that already recommended for Veratria. It may be used either in the form of ointment, or in solution in alcohol, and the proportions to be employed in either case, may vary from ten to thirty or more grains to the ounce, according to the severity of the affection, in the treatment of which it is to be prescribed. The duration of the frictions, also, should be nearly the same ; that is to say, from ten to twenty or more minutes, or what is better, until the pungent sensation produced by the rubbing shows itself. In short, the two substances are so nearly alike to each other in their effects upon the system, and in the manner of their application, that the instructions which have been already given in regard to Veratria, are equally applicable to Delphinia, except that the latter may be with safety applied in affections seated in the parts within the cavity of the mouth. For this purpose a solution in alcohol is preferable, as being less objectionable on the part of the patient, and it ought to be rubbed

upon the mucous membrane, over the seat of the pain, until this be removed, or at least until the peculiar sensation produced by it be as powerful as can be borne ; and the friction should be repeated two or three times a-day, according to circumstances.

As an illustration of the action of Delphinia in removing disease, the following case has been selected. It is also interesting, as in its treatment both remedies were resorted to ; and because it proves the utility of frictions with Delphinia when employed within the mouth.

CASE.

Feb. 8th, 1834.—Mr. J. Sears, Bride Terrace, Liverpool Road, Islington, aged 60, was about seven years ago seized with an acute pain seated in the course of the frontal nerve, on the left side ; about four years since the affection extended itself to the infra-orbital nerve, and for the last twelve months the portio-dura has also become the seat of the disease. Since the commencement of the attack the pain has continued with great severity, and with occasional itermissions of a day or two, but the sum of these has not amounted to above a month in the year.

All attempts which had been made to give him relief had failed, and for three years he had been compelled to relinquish his occupations, on account of the severity of his sufferings. For three weeks before he came under treatment, he had of his own accord made use of frictions with the Veratria ointment over the seat of the pain, and he states that under its influence he has experienced considerable relief, and that at times he is quite free from pain, although the disease is not yet subdued. He was ordered to continue the frictions whenever the pain showed a tendency to return, with the following ointment :

℞.—Veratriæ	. . .	gr. xvi.	
Axung.	. . .	℥ ss.	M. ut fiat unguent.

13th.—The patient has made use of the ointment as directed, and the pain has now disappeared from the temple, eyebrow, and side of the face, with the exception of a point exactly over the infra-orbitary foramen, where it still continues severe, and from whence it occasionally darts to the other parts which were previously affected.

As the progress made since he was last seen was so far satisfactory, in order to try the comparative effects of the Veratria and Delphinia, he was ordered to discontinue the former, and to use in the same manner the following :

R.—Delphiniæ	. .	gr. xvi.	
Axung.	. . .	℥ ss.	M. ut fiat unguent.

17th.—Since last report he has been improving, the pain in the seat of the infra-orbitary foramen has become less and less severe, and he is at present quite free from it. He was ordered to use the Delphinia ointment if the pain should return.

20th.—The pain has never appeared except at the point already mentioned. The same prescription to be continued, with this difference, that the frictions are to be confined as nearly as possible to the skin over the seat of the pain.

23d.—The patient is better to-day than he has yet been ; there is still, however, a tendency to a recurrence of the pain ; he was directed to discontinue the external use of the Delphinia, and instead of it, to rub a portion of the same ointment inside of the mouth, along the angle formed by the gum and cheek, as nearly as possible to the situation of the infra-orbitary foramen, and to continue the friction until the pain was removed, or as long as the application could be borne.

25th.—The friction occasioned no irritation in the mucous membrane ; it gave rise, however, to a sensation of tingling, accompanied with some degree of salivation, and the pain has almost disappeared. Yesterday the patient had no attack, but to-day it has slightly returned. He was ordered to use the frictions to the inside of the cheek and gum, when the pain showed itself, with the following ointment :

℞.—Delphiniæ . gr. x.
Axung. . . ℥ ii. M. ut fiat unguent.

March 11th.—The last prescription was not made use of, as the patient has continued to be quite well. The slight pain he experienced when last seen, disappeared of itself ; and with the exception of a little feeling of uneasiness, which lasted only a minute or two, he has had no symptom of his former disease. He has resumed his employment after an interval of three years—has exposed himself to drafts of cold air, and to all those causes which used formerly to bring on severe paroxysms of pain, but up to this date (June 1835) he has not had the slightest appearance of a return.

CHAPTER III.

Medicinal Employment of the Genus Aconitum, and its Active Principle Aconitine.

Aconitum, *Polyandria Trigynia*, Linn. *Ranunculaceæ*, Juss. *Multisiliquæ*, Linn. Europe.

The genus *Aconitum* has been divided by De Candolle into four

sections,—*Anthora*, *Lycoctonum*, *Cammarum*, and *Napellus*. Several species have been introduced into medicine in different countries, and at various periods. An unknown species appears to have been used by Avicenna, the celebrated Arabian physician, in the treatment of skin diseases ; but since his time, down to a comparatively recent period, no further notice seems to have been taken of it. The person who may be said to have introduced Aconite into practice, was Dr. Störk ; and he recommended its employment in the form of inspissated juice, prepared from the fresh plant, in the treatment of Gout, Chronic Rheumatism, Amaurosis, Syphilis, &c.*

Considerable difference of opinion has prevailed as to the precise species made use of by Störk. He himself names two :—the *Aconitum Napellus* and *A. Neomontanum*. The latter of these is the one determined by Willdenow ; but De Candolle is of opinion that it is a variety of *A. Paniculatum*, to which he has given the name *Störkianum*, to distinguish it as the species employed by Störk. Besides these, however, the *A. Cammarum* and *A. Anthora* have found a place in several continental Pharmacopœias.

Each of our Colleges has given a formula for the preparation of an inspissated juice from the fresh leaves of the monkshood ; but in addition to this, the powder of the leaves, the wine and an alcoholic and two ethereal tinctures, are made use of on the Continent : all of these are employed internally, but are very inconstant in their operation, as might easily have been anticipated from their manner of preparation ; and this circumstance shall be presently noticed. Very recently, M. Lombard, of Geneva, has recommended the use of an alcoholic extract of Aconite in the treatment of acute rheumatism, and has given a process for obtaining it. This, though a much less objectionable one than any of those above-mentioned, gives a product that is still inconstant in its effects ; for he states that he has given with success from half a grain three times a-day, to a drachm and a half in the twenty-four hours.† It appears that there are several causes why the preparations of Aconite at present in use are liable to inconstancy ; they are all prepared either from the fresh plant or from the expressed juice : in the first instance they must vary in power, according to the state of the plant, and the time when it is gathered ; and the extracts made by evaporating the expressed juice must also vary, as in the very act of expression a change in the activity of the product appears to take place, and a still further alteration must ensue during the process of evaporation. I have tried several different extracts made in this way, and have found them almost inert. The process employed by M. Lombard consists in carefully evaporating the expressed juice of the plant, and treating the extract with alcohol ; then filtering and evaporating the tincture with a very gentle heat. In this way, the active matter contained in the inspis-

* Störk, Spicilegium Observationum de Aconito, 1788.
† Gazette Médicale, Juin, 1834.

sated juice may be procured in a more concentrated form, but still the process is liable to some of the objections already stated.

Another objection to these preparations is, that they are all obtained from the least active part of the plant, for the root certainly contains a much greater proportion of the peculiar properties of the Aconite than any other part, and is consequently that which should be used. From these considerations, and from the difficulty of procuring the active principle, I was led to employ a tincture and alcoholic extract, prepared from the powder of the root carefully dried. The tincture is made by digesting one part by weight of the powder, in six parts by measure of strong alcohol, for seven days, and filtering through paper; and the dose for an adult ought not to be more than eight or ten drops three times a-day to commence with, but it may be augmented to twenty; beyond which, however, few patients will bear it to be carried. With regard to the extract, I have never exhibited it internally, but have employed it with great benefit in the manner I shall immediately mention.

When Aconite is administered internally, in any form, and in a small dose, it acts as a diuretic and diaphoretic, and accelerates the pulse: if it be pushed still farther, it begins to affect the nervous system, and occasions headache, nausea, weakness of the joints and muscles, slight confusion of intellect, and a remarkable sensation of tingling in various parts of the body, particularly in the head, face, and extremities. This latter circumstance was remarked by Dr. Duncan, jun., as always accompanying the relief afforded by the internal exhibition of extract of Aconite in cases of Sciatica.* If the dose be still augmented, aberration of mind, dimness of vision, and convulsive movements, come on. A few cases are on record, where such symptoms have shown themselves when the Aconite had been swallowed accidentally; and they have, in some of these, been followed by fainting, vomiting, stupor, and death.

The diseases in which Aconite has been administered, are chiefly those already enumerated; and I have also found much benefit from its employment in tic-douloureux, and other painful nervous affections; but from all that is unknown of its internal use, it does not appear that the benefit to be derived from this method of exhibition is at all to be compared with that which arises from its administration by the Endermic Method, either as regards the amount of effect produced, or the perfect safety with which, in this latter mode, it may be used.

Processes for preparing Aconitine.

THERE are three forms in which the Aconite may be employed externally, namely,—the active principle Aconitine; impure Aconitine, as contained in the ammoniated extract; and, thirdly, in the

* Edin. New Dispensatory, 1830.

form of tincture, or solution of the active principle in alcohol; and of these it is now proposed to give a short account.

M. Peschier, of Geneva, appears to have been the first experimenter who detected the presence of Aconitine, during a chemical examination of the *Aconitum Napellus* and *A. Paniculatum*: he describes it as a peculiar alkaline substance, capable of forming crystallizable salts with acids.* It appears again to have been detected by M. Brandes, in the *A. Neomontanum*; but no particulars regarding it are mentioned. In 1825, M. Pallas described the Aconitine as an alkaline substance, which he had obtained in scales of a yellowish colour.†

In the year 1832, M. Geiger, from the result of his physiological experiments with different Aconites, came to the conclusion, that the acrid Aconites contained a narcotic substance different from their acrid principle; and this opinion led M. Hesse to analyse the *Aconitum Napellus*; and from this he obtained a peculiar body, to which he has given the name Aconitina. The process for obtaining it consists in precipitating a decoction of the dried leaves by hydrated magnesia, washing the precipitate with water, drying it, and then treating it with boiling alcohol, which dissolves the Aconitine and deposits it on cooling.‡

It is described as being incrystallizable, white and granular, or in a colourless mass, transparent, and having the lustre of glass. It is alkaline, inodorous, and has a bitter acrid taste. This acridity, however, does not belong to the Aconitine, but disappears if the base be several times combined with acids, and the salt formed decomposed. When deprived of this acrid principle, it is poisonous in the highest degree, a twelfth part of a grain being sufficient to destroy a little bird with the rapidity of lightning. Aconitine is very fusible: it is little soluble in water, but very much so in alcohol and ether. Its solutions are alkaline, and it neutralizes acids; but its salts are not capable of being crystallized. Such is the account of the substance obtained by MM. Geiger and Hesse; but the elementary analysis has not yet been accomplished.

I have made several attempts to obtain Aconitine from the Parisian chemists, for the purpose of employing it in medicine, but have never hitherto succeeded. It is now, however, prepared in town, and may be had in sufficient quantity for present use, by those practitioners who may wish to make trial of its properties.§ Either of the following processes will yield it: the first is the easier to manipulate, but the second yields a much purer result, and is upon the whole to be preferred.

A quantity of the fresh root of the Aconitum Napellus must be procured, and care should be taken that it be sound, and that the

* Trommsdorff Neues Journal der Pharmacie, vol. 84.
† Journal de Chimie Médicale, tom. 1—193.
‡ Journal de Chimie Médicale, Août, 1834.
§ Aconitine is at present prepared by Mr. Morson, chemist, Southampton Row.

root be that of monkshood; for sometimes other roots are sold for it. Let it be carefully and cautiously dried, and then reduced to powder; this latter operation is not unattended by danger, especially if a part of the fine dust which rises from it be inhaled. One part by weight of the powder, and two parts by measure of strong alcohol, are to be digested together in a gentle heat for seven days, and the tincture, while warm, is to be filtered. It is then to be reduced to the consistence of an extract, by careful evaporation, at a low and well-regulated temperature; the object of this is to prevent the destruction or expulsion of the active principle, which would very probably ensue, if the temperature employed were higher than barely sufficient to carry off the alcohol. To the extract thus prepared, liquid ammonia is to be added, drop by drop, and mixed well with it, to precipitate the alcaloid; and in this part of the process care must be taken that too much be not added, as in some instances the product appears to have been decomposed by inattention to this circumstance. It is difficult to give a precise rule as to the quantity; but enough will have been added, if the extract give out the odour of ammonia, when stirred.

The mass now consists of impure Aconitine, mixed up with a quantity of extractive and other matters, soluble in water; and it may be taken up either with boiling alcohol, or sulphuric ether; or the soluble matter may be removed, by repeated washings with small quantities of cold water, which will leave the Aconitine. This latter process is the one we have generally employed, and is performed by pouring a little water on the extract, and mixing them carefully together, then allowing the undissolved part to subside, pouring off the fluid, and repeating the operation, as long as any soluble matter is taken up, a quantity of light brown or grey powder is left, which may be purified by subsequent solution in alcohol. This powder contains the active properties of the Aconite, in a high degree of concentration. A grain of it was dissolved in a drachm of alcohol; and twenty drops of the solution put into the mouth of a guinea-pig occasioned death in a few minutes. Other experiments have been performed, all of which prove the extreme energy of the substance.

The second process consists in dissolving the alcoholic extract, prepared as before, without the addition of the ammonia, in as much cold water as will take it up, and carefully decanting the solution from the insoluble part, and then filtering it. To the filtered solution liquid ammonia is to be added, drop by drop, as long as it occasions any precipitation. When the precipitate has subsided, the supernatant fluid should be carefully poured away, or drawn off by means of a syphon; and after the precipitate has been deprived of as much of the fluid as possible, it should be purified by a sufficient number of washings with small quantities of cold water, or, what is better, it may be dissolved in as much alcohol as will take it up, and the solution thrown into cold water; and the precipitate thus

formed is to be carefully dried. The product obtained by this process is white.

External Application of Aconitine.

It has already been stated, that if a grain or two of Veratria or Delphinia be mixed up with a little lard, or dissolved in a drachm of alcohol, and a small quantity be rubbed upon the skin of the forehead or other tender part, a sensation of heat and tingling will be experienced, after the friction has been continued for a minute or two. If the same procedure be followed with the Aconitine, a similar result will be obtained. The sensations produced by the three substances differ, however, in a few particulars. When Veratria is employed, it produces a strong sensation of tingling or rather a sharp feeling, similar to that produced by receiving a succession of electric sparks on an uncovered part of the body; whilst the Delphinia gives rise to a sensation of burning, not unlike that which manifests itself a short time after the application of a blister, but not to an unpleasant degree.

The Aconitine is possessed of an action similar, in some respects at least, to that of Delphinia. When a small quantity of it, either made into an ointment, or dissolved in alcohol, is rubbed for a minute or two upon the skin, a sensation of heat and prickling is experienced; to this, succeeds a feeling of numbness and constriction in the part, as if a heavy weight were laid upon it, or as if the skin were drawn together, by the powerful and involuntary contraction of the muscles beneath. This effect lasts from two or three, to twelve or more hours, according to the quantity rubbed in. So small a portion as the one-hundreth part of a grain has produced a sensation that has continued a whole day; but the alcoloid, in this instance, was in a high degree of purity.

The action of the Aconitine upon the cutaneous vessels, appears to be less than that of either Veratria or Delphinia; for in no case hitherto observed, has it produced a greater degree of vascular excitement than might easily be accounted for by the friction itself; and in one instance where the Veratria ointment did occasion irritation, the Aconitine has been employed without giving rise to any.

The diseases in which I have chiefly employed the Aconitine externally, are Tic-Douloureux and Neuralgic affections generally, and in gouty and rheumatic cases; and its success has fully answered the anticipations that had been formed of its utility. It may be employed in the form of solution in alcohol, in the proportion of one or more grains to the drachm, and in ointment, made according to the following prescription:—

℞ Aconitinæ, gr. ii.
Alcohol, gtt. vi. tere optime
et adde, Axung, ℥ i. ut fiat unguent.

The object of adding the alcohol, is to prevent the Aconitine from

forming a thick compound with part of the lard, which renders it difficult to make a proper ointment.

The proportion of the alcaloid in this prescription will, in general, be sufficient to begin with, but it may be augmented to four or five grains to the drachm, if necessary ; and in one case of Tic-Douloureux of unusual severity, as much as eight grains to the drachm were prescribed with the most marked benefit. The best manner of applying the ointment, is simply to rub a small part of it over the whole seat of the affection, till the pain be either for the time removed, or until the full effect upon the cutaneous nerves above described be brought about ; and the friction should be repeated three or four times, or more frequently in the day, according to the effect produced upon the disease. The proportion of the Aconitine ought to be increased at every second or third friction ; and the same rule elsewhere laid down, in regard to the action of Veratria and Delphinia, also holds good in the present instance,—namely, that unless the friction occasion a full development of the peculiar impressions caused by the Aconitine when rubbed on the skin, no benefit whatever is to be looked for from its employment. It is almost needless to remark, that an application of such activity should not be resorted to, if there be the slightest abrasion of the surface of the skin, and that it should be carefully kept from coming in contact with any of the mucous membranes.

External Application of the Ammoniated Extract of Aconite, &c.

The next preparation that requires notice, is the ammoniated extract of Aconite ; this is probably the best appellation for the substance, although it be in reality a mixture of all the active principles, along with extractive and other matters. It is made by evaporating very carefully, and at a low temperature, the tincture of the dried root of the plant, prepared as already directed in the process for obtaining the Aconitine, to the consistence of an extract. To every drachm of this, eight or ten drops of liquor ammoniæ should be added ; and after the mixture has stood a short time in a very gentle heat, to drive off the excess of ammonia, it is to be used in the form of ointment, according to the following prescription :—

℞. Extract. Aconit. Ammon. ʒ i.
Axung, ʒ iii. M. ut fiat unguent.

This, from its dark colour, may be a less agreeable application than the Aconitine ointment : but it appears to me, to be at least as efficacious, and it has the advantage of being easily and cheaply prepared : and on these accounts it is better suited for hospital practice. The proportion of the extract may be increased two or three-fold, according to circumstances.

When this ointment is rubbed upon the skin, it occasions sensations in the part, similar to those which are produced by the Aconitine ointment ; they are, however, rather more pungent in their

character; and this probably arises from the extract containing what is called the acrid principle of the plant, as well as the alcaloid itself; and it is absolutely necessary that with this preparation also, these sensations should be induced, in order to its having a full effect on the disease for which it is applied.

In less severe cases, the simple saturated tincture of the dried root, with or without the addition of a little ammonia, may be used; it has similar properties, but in a much smaller degree of development, with the two preparations above mentioned, and the same instruction as to its use ought to be attended to.

Severe Case of Neuralgia in the Finger, treated by Preparations of Aconite.

The following case has been selected as affording the most conclusive evidence possible of the efficacy of preparations of Aconite in removing Neuralgia. It is one of the most severe and obstinate on record; and during a period of above two years, had resisted every means that could be devised for its removal. The previous history and treatment are taken from a very able lecture on Neuralgia by Dr. Elliotson, which was published in the *Lancet* of December 8th, 1832.

Samuel Best, residing No. 7, Somers Street, Liquorpond Street.

"This man was a journeyman printer, aged 32, and had been ill two years. He first of all had pain of the legs, arms, and wrists, and when he came in, the pain was confined to the middle-finger of the left-hand, on each side, along the course of the nerve. The other fingers of the same hand were benumbed—were without any great degree of feeling, but the thumb was unaffected. Originally he had had pain on the right side of the face—that is on the opposite side of the body, and the pain then commenced in the submaxillary nerve, and extended upwards, so as partly to affect the second branch of the fifth pair, as well as the third. It is therefore to be recollected, that he had had Neuralgia in another part of the body. All this, however, had ceased a month before admission, at which time he had only pain on each side of the middle-finger, and after that had existed some time, the *other* fingers had become benumbed.

"The pain was of a very agonising character; a plunging. stabbing pain, as though you were running a penknife along the finger. Patients usually describe the pain in neuralgia as stabbing and plunging. The least touch gave him violent pain, like an electric shock. As the least touch produced such violent pain, he could not bear his nails to be cut, and the consequence was, that the nails of that hand had grown to a great length. He could not sustain the motion of the hand which the cutting of the nails necessarily produced, and the agony of the pain was such, that he bit the nails of the fingers of the other hand, so that the nails on the fingers of it were eaten down by him in his agony, as far as they

could be. The appearance was certainly very remarkable ; for on one hand the nails were, as I have just said, as short as they could be ; and on the other hand, though they were not so long as they might be, yet they were of very great length. I believe whenever he had a very violent attack of pain, the nails of the affected hand became discoloured, and remained so for some time.

"I could detect no cause for this at all. I could connect it with no obvious morbid state, and therefore, what produced the pain I could not tell. I could only say there was a pain, and that the pain was clearly situated in the nerves—following the course of nerves, affecting other parts also exactly in the situation of branches of known nerves, and having the usual character of pain of the nerves, or at least, what it very frequently is, stabbing and plunging. There was no heat or inflammation of the fingers ; nothing whatever to be seen ; but yet there was agonising pain, and the slightest touch aggravated the pain when present, or brought it on at a moment when he scarcely felt any.

"*Treatment.*—One of the best remedies in this disease, but by no means a specific, and by no means so successful I think as in some other nervous complaints, is carbonate of iron. Its efficacy in this disease, so far as I know, was first pointed out by Mr. Hutchinson, a surgeon in the country, who, I believe, is now dead. * *

"This man's complaint having lasted two years, and carbonate of iron being an innocent remedy, provided you keep the bowels regularly open, he took half an ounce three times a day ; and when he had taken that for five days without any benefit whatever, he took the same quantity every four hours.

"Now this did him a certain degree of good. He was better. Still he had pain sufficient to keep him awake at night ; and I gave him, in addition, a quarter of a grain of muriate of morphia. The benefit was but temporary ; and I applied to the finger a solution of the cyanuret of potassium, which has been so much praised by the French. But it did not relieve him materially, and the solution was then made stronger than the French have recommended it. It was carried as far as twenty-four grains to an ounce of water. After a time it was suggested, that it was merely the cold which did him good, and I applied ether, to see if that would relieve him, and it did so, much more than the solution of cyanuret of potassium had done. Still, however, he was very little better. The amendment which he at first experienced on taking the iron ceased, and I was obliged to increase the dose of medicine, and likewise the muriate of morphia, for he obtained no sleep. He took a whole grain of the latter every night. The iron was then increased to the quantity of an ounce, and it was given every four hours. His health improved under it, and from being pale and thin, he lost his great paleness, and gained flesh, and thought himself quite another man, so far as his general health was concerned. The quantity of cyanuret of potassium was increased now, to a drachm in an ounce of water ; but it afforded no relief. He still found more benefit

from ether. One could not expect a man to continue swallowing more than an ounce of iron every four hours. He would have taken it in any quantity, but it was necessary to consider his stomach, notwithstanding his good will to take the medicine. I therefore gave him another form of iron also, the sulphate. I do not know that the carbonate is superior to the sulphate in this disease, or in chorea, and the latter may frequently be taken the most easily. He began with five grains, in conjunction with the carbonate of iron, and took both every three hours. His agony was still extreme, and the sulphate was, therefore, increased to ten grains, and afterwards to fifteen. He received some degree of benefit, but it was only temporary.

"I thought now that the iron had had a very fair trial, and it was only relinquished on the 26th of July, he having begun to take it on the 8th of March, so that he had continued it for three months. This was a very fair trial, both with respect to the quantity of the dose, and the long continuance of its exhibition. * * *

"I then relinquished the iron altogether, and endeavoured to apply strychnine to the finger. We attempted to blister the finger, and then sprinkled half a grain of the strychnine upon it. It was, however, with very great difficulty that we produced vesication; very imperfect vesication was effected, and therefore it was not very well managed. I still determined on trying whether the strychnine would do him good or not, and I therefore exhibited the twelfth of a grain internally. As strychnine is so powerful an agent, I never like to begin with a larger quantity than that. It was then increased gradually to the eleventh, tenth, ninth, eighth, and so on, of a grain. Still he was no better, and I was obliged to increase the muriate of morphia to two grains every night, one grain being said to be equal to four grains of opium. The man told me, with tears in his eyes, that the agony was such that he never slept.

"The strychnine was increased now to half a grain three times a-day, and I had the finger smeared with croton oil. He could not bear to have it rubbed in, and therefore it was gently smeared on the part, but produced no great irritation. His health now began to decline. He was taking on the 7th of August three-fifths of a grain of strychnine three times a-day, and two grains and a half of muriate of morphia, but he began to take the iron again. I gave it him without any hopes of its producing benefit, but for the purpose of improving his general health. He began with half an ounce three times a-day, which was increased to an ounce, and then to four times a-day. His health soon improved again, but the pain continued unabated, and the muriate of morphia was increased to three grains twice a-day. His pain was such, that I was obliged to give him an opiate in the day time as well as at night. The strychnine was not increased beyond three-fifths of a grain three times a-day, and as it did him no good, merely produced some twitching of the limbs, it was relinquished on the 21st of August, never having been of the slightest service. Arsenic has been known to

be serviceable in some cases combined with an alkali as in the liquor arsenicalis. He commenced with this on the 21st of August, and began with small doses three minims three times a-day, not taking it on an empty stomach. This was increased gradually to nine minims, but without any effect on the disease, though it began to make him sick. Nine minims I consider a very full dose. It, however, disturbed his stomach, and to prevent the sickness he took two minims of hydrocyanic acid three times a-day, half an hour before the arsenic. This did not lessen the sickness, and I therefore was obliged to increase it to three minims, and went gradually on till I arrived at a dose of nine minims three times a-day. This entirely prevented the sickness arising from the arsenic. Hydrocyanic acid has the very valuable property of stopping vomiting, provided this does not depend on inflammation. Knowing the power that it has of tranquillizing the stomach generally, though it does not invariably produce relief in gastrodinia, I thought it would stop vomiting. I never heard that it had been used in such cases, but I thought it must do good. After employing it for two or three years, I thought it might prevent medicines from causing further vomiting. I tried it, and I found that it had that power in a very marked degree. Finding in this case that two minims had no effect, I gradually increased it, as I have before mentioned, to nine minims, and it then entirely stopped the sickness caused by the arsenic.

"All this time the arsenic did no good; he bore it very well, but it was of no service to him, and I therefore gradually increased it to the largest dose that I ever gave—viz. twenty minims three times a-day. He now began to look thin again—did not look so well as before. I could not, however, tell whether it was the result of the arsenic. It might merely have arisen from his extreme suffering, but still it was right that I should discontinue the medicine, and I did so without his having derived the slightest benefit from it during the whole period of its exhibition. As it was necessary to procure sleep, the muriate of morphia was gradually increased up to six, and at last to eight grains twice a-day. His agony was such, that the begged to have the opiate, and he also begged to have it increased, otherwise he said he could scarcely exist.

"He was taking, therefore, at last, eight grains of muriate of morphia, twice a-day, which gave him ease, (I got him to omit it once or twice, but he suffered so much, that he begged to have it again), and twenty minims of liquor arsenicalis, always taking before it nine minims of hydrocyanic acid. This he bore perfectly well, with the exception that he looked as ill as he did when he first came in, not worse, but just as he did before I gave him the iron.

"He now wished to go out of the hospital for a fortnight for a change, and he was supplied with a quantity of muriate of morphia to take with him till he came again.

"I attempted, during the time, other local measures. He once rubbed the extract of stramonium on his finger frequently every

day, and it relieved him for a time. He rubbed also the extract of belladonna, two or three times a-day, and this, he said, certainly produced relief for some time ; but I am sorry to say, that at the very last he was nearly as bad as at first. He himself maintained that he was a great deal better ; he did not *allow* it, but *maintained* it. I was afraid that he was not improved, but he assured me that he was better after he took the iron ; that altogether his sufferings were not such as they were before he came to the hospital ; but still they were dreadful. He appeared to be an excellent man, a man of a strong mind, but in his agony the tears were seen running down his cheeks.

"He will return, but I have no idea of medicine doing him any further good. We have given him the most powerful remedies, and these have been used in the most powerful manner, although with great care, but he is not materially better, and therefore, when he comes back it is to be considered whether or not he shall have his finger amputated. I have very little hope, however, in the operation, and for this reason—cases have occurred in which the operation has failed, the disease having reappeared in the corresponding nerves of the other hand, and in the trunk of the nerves the branches of which have suffered amputation. Still it may be right to make the trial. I have little hope of success, however, for another reason, because he has had the affection before in the nerves of the face."

This patient came under treatment, about the end of October, 1834, and in detailing his subsequent progress, I shall confine myself to a weekly report, in order to avoid repetition. The history which he gave of his case was substantially the same as that quoted above. He stated, that since December 1832, he had been suffering in an extreme degree, that he had been in the hospital about eighteen months subsequent to that date, and had been using every remedy that was likely to afford relief, but in vain. He stated, that the only ease he had, was from taking large doses of morphia, to the extent of from ten to twenty grains a-day ; but that even these procured him only a few hours of broken rest.

The pain was seated in the fingers and wrist of the left hand, but particularly in the middle finger, through which, and along the wrist, it darted like a stab with a knife. He could not bear the slightest degree of motion in any of the joints, either of the fingers or wrist, without bringing on a violent paroxysm of pain, and for the same reason he could not suffer the middle finger to be touched. His nails were long and curved. The ring and little fingers were benumbed and painful, and a similar feeling extended up the arm as far as the shoulder. He had had no pain in his face for three months, but he stated that the pain in the hand, at times, almost deprived him of his senses. His appearance was wretched, and indicated the sufferings he endured.

First Week. Under these circumstances, he was ordered to rub the saturatedt incture of the root of the *Aconitum Napellus*, pre-

pared as already directed, for twenty minutes, along the back of the hand and fingers. The friction at first gave him extreme pain, but towards the end of the time he could bear it better, and it gave rise to a sensation of heat in the affected finger, which was attended by a marked diminution of the pain. He was ordered to repeat the friction for ten minutes, twice a day, and to take six drops of tincture of Aconite, prepared for internal use,* every four hours, in water. The immediate effect of this treatment was, to enable the patient to do without his daily dose of twelve grains of acetate of morphia, which he had been in the habit of taking for many months before. The friction excited sensations of heat and numbness in the hand, and could be borne with greater ease at each successive application, and he could sleep three or four hours at a time without interruption. The dose of the tincture was gradually augmented in the course of this week, to ten drops every four hours, and the friction was ordered to be used till heat and tingling were produced, whenever the pain came on.

The pain was removed every time the tincture was applied, and the quantity taken internally occasioned tingling and numbness in the extremities, and acted as a diuretic. The patient slept six or seven hours at a time: he had intervals of perfect freedom from pain, with distinct paroxysms, varying in intensity: and on the seventh day, from the commencement of the treatment, he was so far recovered, that he could bear to have his nails cut, which had not been the case for nine months previously.

Second Week. During the next seven days the same treatment was continued. He took the tincture internally, in nearly the same dose, and rubbed it on the affected joints, whenever the pain came on. Under these means, the accessions of pain gradually diminished in intensity, and the intervals of complete relief became longer, so that at the end of this week he had little pain except on motion.

Third Week. This week he was directed to continue the same treatment, to use the affected joints as much as he could: this, however, brought on attacks of pain, but these were at once removed by frictions, continued until tingling was produced.

Fourth Week. On the first day of this week he was directed to substitute for the tincture the following ointment:—

℞. Aconitinæ. gr. ii.
Adipis. ℥ i. ut fiat unguent.

and to rub with it whenever he had pain.

The tingling caused by this ointment was very considerable, and generally lasted three or four hours afterwards. He had occasion to use it three times a-day, and one grain of Aconitine was added to the second prescription, as the first began to lose its effect. In a day or two he discontinued the tincture internally, and was directed to use the ointment of the ammoniated extract of Aconite, made ac-

* Vide page 55.

cording to the formula already given, in order to try the comparative effect of this application. In this case it was found to produce a more powerful sensation in the parts than the Aconitine itself, and to be very useful in removing attacks of pain when they came on. He used nothing except the remedies mentioned above, and at the end of four weeks and three days from the commencement of the treatment, he was totally free of pain, and has continued to be so ever since. He can use his hand with perfect freedom, but complains of its not being so strong as the other, probably on account of his having been obliged to keep it for four years almost in the same position.

On the 6th of January last, he had an attack of pain in the right cheek, on account of his having been exposed to the effects of cold, this was, however, immediately removed by the Aconitine ointment; he has had no return of it, and is at present in excellent health.

ST. THOMAS'S HOSPITAL REPORT.

(From the London Medical and Surgical Journal of Saturday, December 13, 1834.)

"M. A. Huntingford, æt. 28, admitted into St. Thomas's Hospital, under the care of Dr. Roots, April 3d, 1834. She then stated that she had been subject to paroxysms of pain in the loins, thighs, and legs, for more than two years, which had gradually increased. She had been in the hospital, under Dr. Elliotson, in January last, by whom she was at first freely depleted; after which the disease assumed an intermittent form, and she then took large doses of quinine, and was slightly relieved by it, but left the hospital before she was well, and soon became worse.

"At the time of her second admission, her general health was not impaired. She was subject to paroxysms of pain, generally two every day, in the loins, hips, thighs, and legs, following the course of the sciatic nerve. The pain was of a severe, cutting kind, and attended by some twitching of the muscles. There was a tenderness on pressure of the lumbar vertebræ, and along the whole course of the sciatic nerve. The paroxysms of pain came on and ceased suddenly, and without any warning: they did not observe any regular intervals, and were of variable duration, often continuing for several hours; and in the intervals she was seldom free from uneasiness. Has no symptoms of hysteria; menstruation regular.

"Quinæ sulph. gr. v.
Ferri sub-carb. ℥ ij.—6 ta. quaque horá.
Empl. canth. sacro.

"April 9th. No change.

"Ferri. carb. ℥ iij. extr. stramonii. gr. ss. 6 tis horis.

"On the 12th, the paroxysms were of rather shorter duration, but returned as frequently, and were quite as severe as ever. The

quinine was increased to gr. vij. and the iron to ℥ iv. in each dose. On the 14th she had no pain, and only a little on the evening of the 16th. Quinine increased to gr. x. in each dose. The intermittent character of the pain continued to the 30th, and the paroxysms had gradually become less severe and of shorter duration. The stramonium was omitted on this day, as the sight had become affected by it.

"May 3d. The improvement had continued, and the quinine was increased to gr. xv. From the 9th to the 24th, she suffered from head-ache and sickness; but the medicine was continued, and the pain abated. On the 24th, the iron was increased to ℥ vi.; and on the 28th, gr. $\frac{1}{6}$ of muriate of morphia was ordered with each dose.

"June 11th. The pain still better and intermitting; but, in consequence of continued headache and sickness, all the medicines were omitted.

"Ung. veratri (℈ i. ad. ℥. i. ?) ℥ i. ter. die. lumbis.

"On the 14th, the pain had become more severe, and the quinine, carbonate of iron, and muriate of morphia, were gradually resumed, and increased up to August 23d; at which time she was taking

"Quinæ sulph. ℈ i.
Ferri subcarb. ℨ i.
Morphiæ muriat. gr. $\frac{1}{3}$, 6 tis horis.

"These medicines were omitted for four days, during which she took some creosote; but the pains returned immediately after the medicine was changed, and continued to increase. The old medicines were resumed, and she quickly improved, as before. She left the hospital on the 22d of September, of her own accord; the pain had diminished much in severity,—returned much less frequently, and not at any regular intervals. The pain soon increased, but never attained its original severity. She was again admitted into the hospital, under Dr. Roots, Nov. 21st. The pain was of the same character, and in the same situation as before; commencing in the loins, and afterwards affecting the gluteal muscles, and extending down the back part of the thighs to the hams and heels. The paroxysms usually came on about 7, p. m., and continued four or five hours. During the attack the muscles were firm and contracted. There was some tenderness of the gluteal muscles at all times. General health, good; pulse, seventy-five,—feeble. On the 25th, the following ointment was ordered:—

"Aconitæ, gr. ij.
Ung. cetacei. ℥ i. ft. ung. et infricet pars sexta part. dolent. nocte maneq.

"On the 28th, she stated that after each application of the ointment, the parts rubbed became hot, and smarted; but this was quickly followed by numbness. After the third application, the pain was a little relieved; and after the fifth, the amendment was

very remarkable. The paroxysms were much diminished in severity, and did not continue more than one or two hours. The pain, which had formerly been very acute, she described as being much less severe, and called it a "burning twitching." The parts were less tender on pressure, and she could sit up without causing pain in the gluteal muscles, which she could not do three days since.

"Infricet. unguent ter die.

"Dec. 2d. Two days since, in the morning, she had a more violent paroxysm of pain than she has had since her admission. After it had continued an hour and a half, the ointment was applied, and in ten minutes she was much relieved. The paroxysms do not now last more than twenty minutes, and she says they have never been so slight before.

"6th. The pain has now resumed its intermittent character. On the 3d, 5th, and 7th, she had a short and slight paroxysm in the evening; each being less severe than that preceding it.

"Quinæ. sulph. gr. v. 6 tis horis.

"9th. The pain returns every other night, but is gradually decreasing in duration and severity.

"There is a man in Luke's Ward, under Dr. Roots, who has a painful affection of the sciatic nerve, for which he used Veratrine ointment for some time without any benefit. He has used the Aconitine for a week, and a very decided mitigation of the pain followed its application.

"Dr. Roots informs me that he has used the same remedy in private practice, in three cases, with similar success."

In conclusion, these are the principal circumstances which occur to me at present, as worthy of mention in regard to this new class of remedies. The facts which have been adduced, appear to bear out the position advanced at the commencement—that there exists a class of active principles in the *Ranunculaceæ* possessed of similar properties when applied to the surface of the skin, and acting in a similar manner in the same diseases; and if I succeed in calling the attention of the profession to them by what has been stated, my object in making this communication will have been answered.

APPENDIX.

CASES COMMUNICATED TO THE AUTHOR.

Case of Tic-Douloureux cured by Veratria Ointment, communicated by J. Holme, Esq., Surgeon, Linton, Cambridgeshire.

Miss L., a young lady ten years of age, has suffered from tic-douloureux for about four years. In the winter of 1829-30, she first complained of frequent pains in the face, in the situation of the infra-orbitary foramen, attended by intermissions, and which at first were considered as probably connected with the teeth. In the winter of 1830-1831, her sufferings became much greater; and on account of the intermitting nature of the pain, she was then treated with quinine; but having experienced no relief from it, she had three teeth extracted, yet without benefit. During the summer of this year (1831), she was not free from suffering, especially when exposed to chilly weather; and if she happened to be out after sun-set the pain was brought on.

In the commencement of the next winter I first saw her; at that time she was under active medical treatment, and had taken carbonate of iron, arsenic, morphia, belladonna, quinine largely, purgatives, mercury, and had made use of topical applications, but all without advantage. The paroxysms of pain came on at regular periods, two and three times a-day, for the space of from two to five hours at each accession.

In February 1832, she was taken to London, and put under the care of several eminent practitioners, but derived no benefit, except for three weeks in July, after which the pain returned with increased violence. Baths of various kinds were also tried, but without effect. She returned home, and six weeks since the Veratria ointment was first tried, and in about five days she experienced much relief. Within that time she had no attack of pain during the night, and in three days more, the daily paroxysms nearly ceased. We continued to rub the ointment for about twenty minutes before the expected time of the attack, and in one day, less than a fortnight from beginning to use the frictions, all recurrence of pain had left her, and she now continues quite free from any inconvenience. The only medicine she took during the use of the ointment, was four grains of *pil. aloes et myrrhæ*, at bed-time.

April 21, 1834.

Cases in which the Veratria Ointment has been employed, communicated by Edward MacGowan, Esq., M.D., Exeter.

CASE I.

The first case happened in a farmer, about thirty years of age, who had been many weeks suffering from severe rheumatism in the articulations generally, but especially of the knees and feet. He presented the rheumatic diathesis in a marked degree, and there was a great tendency to leuco-phlegmatic anasarca. I gave him the sub-carb. ammon. internally, with guaiacum, and ordered frictions on the joints to be made with the ointment of Veratria. In the course of a week, he rode into Exeter, a distance of five miles, and told me he was quite recovered.

To my surprise the swellings and pain in the joints had subsided, and the general health was much restored. He had been almost a cripple previously ; and has not had since, to my knowledge, any return of his former complaint.

CASE II.

An elderly lady of gouty diathesis, and subject to frequent attacks of gout in the feet, suffered much from a swelled leg and foot, which presented an appearance precisely similar to the Barbadoes leg. There was besides, a chronic inflammation in the toes of the same limb, around the nail of the large toe particularly, which had often been attacked by gout, and which was accompanied with a fungous kind of ulceration. The whole limb was greatly enlarged, and the cellular tissue extremely hard, with now and then an erythematous inflammation over the surface. After poppy-head fomentations, &c., I used the Veratria ointment, which reduced the swelling, and abated the pain beyond my hopes. At first it produced a slight irritation, which obliged me occasionally to suspend the frictions, but that was the only inconvenience that resulted from it. The limb is still considerably enlarged but much reduced and less painful than before, which I certainly think is owing to the Veratria.

I have some other instances of the advantageous exhibition of Veratria externally, which confirm me in the persuasion of its efficacy in rheumatic and gouty swellings, particularly in debilitated constitutions. In such cases, it seems to stimulate the capillary and absorbent systems, and bring back a vigorous and healthy action.

April 12th, 1834.

Case of Tic-Douloureux cured by Frictions with Veratria Ointment, communicated by John Spence, Esq., Surgeon, Otley, Yorkshire.

A lady, about twenty-four years of age, has been affected for the last eight or ten years with a most painful neuralgic affection, situ-

ated in the cheek and temple of the right side. The pain makes its appearance in regular paroxysms, varying in length from a few days to several weeks, and is succeeded by intervals of partial relief. The state of the patient has been very distressing, and during the continuance of the attack her sufferings have been so extreme, as to bring her into a condition almost bordering on distraction.

Before she came under my care, she had been treated by active depleting measures ; she had been bled generally and locally, and had applied topical remedies of almost every description, including repeated blistering, but without experiencing any cessation of the pain. For some time I continued a similar course of treatment, along with the internal administration of various medicines, none of which, however, had a good effect, except preparations of iron ; these succeeded for a time in diminishing the severity of the affection, but appeared to have no power in removing it. I now ordered the patient to rub the affected part of the face, for twenty minutes, with a portion of ointment made with a scruple of Veratria to one ounce of lard, when the paroxysm came on. Next time I saw her, she told me that when the pain made its appearance, she applied the ointment as directed, and that the attack was cut short immediately. After this period the paroxysms returned two or three times ; but were removed by the same means. I saw her a day or two ago ; she was quite well, and is now free from the disease.

June 10th, 1834.

Notices of Cases in which the Veratria Ointment has been employed, communicated by S. Hood, Esq., M. D., Brighton.

The first case in which I tried Veratrine, was in that of a lady who had laboured some considerable time under tic-douloureux, seated in the second branch of the fifth pair of nerves, on the left side of the face. Many remedies had been previously tried without effect, and it was at last determined upon to attempt the removal of the pain by means of friction over the affected part with the Veratrine ointment of the usual strength. After this treatment had been continued for three days, the disease was apparently cured, but again returned with considerable violence ; the ointment was again had recourse to, and the patient is now quite well. It may be proper to state that latterly she had been in the habit of taking three grains of sulphate of quinine a-day ; I do not think, however, from previous trials of it in this case, that it would have been of the least benefit without the ointment.

In two other cases of tic-douloureux, in the first branch of the fifth pair, the Veratrine was most efficacious : in one, the disease was removed by it in a single night ; the other was relieved on the

third day after the first application of the ointment; there was, however, a relapse in about a week afterwards, but the pain was again removed by the friction, and the patient is now quite well.

In addition to these, I have prescribed the Veratrine ointment in three cases of painful affections in the course of the sciatic nerve; they went on gradually improving and are now removed.

About the diuretic effects of the Veratria there can be no doubt; in every instance in which I have employed it, the application has been followed by an increased discharge of straw-coloured urine. In dropsical cases occurring in old persons, after the diuretics in common use have been carried as far as the stomach can bear them, it will be of great utility while the use of internal remedies is suspended. I have three such cases at present under its influence, and all of them are going on favourably, and likely to terminate well.

April 27th, 1834.

Case illustrative of the effect of Frictions with Veratria Ointment in Palpitation, communicated by William Porter, Esq., Surgeon, Gower Street.

A LADY, about twenty-eight years of age, has suffered from a dropsical affection for about eighteen months, accompanied with a considerable degree of palpitation of the heart and irregularity of the pulse, and these symptoms appeared to be connected with irregular menstruation, from which the patient had suffered for some time. The lower extremities were œdematous, and there was difficulty of respiration and general nervous excitement. In the treatment of the disease various measures were employed without much benefit, until about two months ago, when the œdematous state of the extremities was much relieved by the use of diuretics and drastic purgatives; the palpitation, however, continued the same as before. As this latter symptom was peculiarly annoying to the patient, the attempt was made to remove it by means of an ointment made with twenty grains of Veratria to one drachm of lard, and a small part of this was ordered to be rubbed over the region of the heart for ten minutes night and morning. After the second or third friction the palpitation disappeared along with the irregularity in the pulse; this took place about eight weeks ago, and although the patient is still unwell, it has not returned.

June 20th, 1835.

THE END.